MINNESOTA GO

State Rail Plan

BACKGROUND RESEARCH AND SYNTHESIS TECHNICAL MEMORANDUM

Report

April 2024

For More Information Visit: https://talk.dot.state.mn.us/state-rail-plan

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ACRONYMS AND ABBREVIATIONS

ACTT	Advocacy Council for Tribal Transportation
ADA	Americans with Disabilities Act
BIPOC	Black, Indigenous, People of Color
FAST Act	Fixing America's Surface Transportation Act of 2015
FRA	Federal Railroad Administration
IAP2	International Association for Public Participation
MnDOT	Minnesota Department of Transportation
MPO	Metropolitan Planning Organization
PAC	Policy Advisory Committee
PMT	Project Management Team
PRIIA	Passenger Rail Investment and Improvement Act of 2008
RDO	Regional Development Organization
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAC	Technical Advisory Committee

This document was prepared for the Minnesota Department of Transportation in accordance with 49 U.S. Code Chapter 227.

INTRODUCTION

The State Rail Plan (Plan) is a mode-specific plan that builds on the Minnesota GO vision. The Minnesota Department of Transportation (MnDOT) is updating the Plan to guide the development of Minnesota's rail system for the next 20 years. The Plan is an update to the March 2015 Minnesota GO State Rail Plan. The Plan conforms to Minnesota Session Law 2008, Section 174.03 subd. 1b, as well as to requirements of the federal Passenger Rail Investment and Improvement Act (PRIIA) which specifies that each state, at its own election, may prepare and maintain a state rail plan for:

- Setting forth state policy involving freight and passenger rail transportation, including commuter rail operations, in the state
- Establishing the period covered by the state rail plan
- Presenting priorities and strategies to enhance rail service in the state that benefits the public
- Serving as the basis for Federal and State rail investments within the state

Per federal requirements the Plan covers each mode that uses the general railroad system of transportation[1], which includes not only intercity passenger and freight rail service, but also commuter rail. Commuter rail is defined as a short haul passenger train operating on track which is part of the general railroad system of transportation, within an urban, suburban or metropolitan area, operating on a regular schedule.[2] The Plan does not cover fixed guideway transit modes that operate on their own right-of-ways such as light rail transit (LRT).

The Plan also conforms to the content requirements of the Federal Railroad Administration (FRA) Final State Rail Plan Guidance (FRA Guidance) published in 2013. However, it does not follow the FRA Guidance structure, which provides a specific format, consisting of six chapters. Rather, the Plan presents content in a series of technical memoranda which are consolidated into a condensed final report. This Background Research and Synthesis Technical Memorandum represents the first in a series of memos that will include the following:

- Background Research and Synthesis, which includes an analysis of existing conditions of rail infrastructure and services; an analysis of rail's role in people and goods movement in Minnesota; organization, policy and funding to support rail; rail's impact on Minnesota's economy and environment. Also included is an analysis of trends that will impact rail in the future, accounting for economic and demographic trends; freight and passenger trends; land use trends.
- An analysis of strengths, weaknesses, opportunities, and threats facing the Minnesota rail network
- An Action Plan, which includes vision, goals, objectives, strategies, plus specific actions to accomplish vision, goals, objectives, priorities for implementation, and performance measures for monitoring the results.
- A summary of engagement, including how stakeholders/general public were engaged, comments received, and how they were addressed in the Rail Plan.

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[1] Defined by the FRA as, "the network of standard gauge track over which goods may be transported throughout the nation and passengers may travel between cities and within metropolitan and suburban areas."

[2] https://www.ecfr.gov/current/title-49/subtitle-B/chapter-II/part-221/subpart-A/section-221.5.

EXISTING CONDITIONS

The existing conditions section of this technical memorandum cover a series of topics including:

- Existing rail infrastructure and services
- Rail and Minnesota goods and people movement
- Organization, policy and funding to support rail
- Rail impacts on Minnesota

EXISTING RAIL INFRASTRUCTURE AND SERVICES

RAIL NETWORK

Minnesota's rail network as shown in Figure 1 is one of the most extensive in the nation, ranked 8th among all U.S. states by the Association of American Railroads (AAR) by rail miles.[3] Most of the rail mileage in Minnesota is owned by private freight railroad companies. Most, (80%) is operated[4] by Class I railroads. These are railroads with over a billion dollars in annual revenue. They connect Minnesota to other areas of North America. Four of six Class I railroads that operate in the U.S. operate in Minnesota, BNSF Railway (BNSF), Canadian National Railway (CN), CPKC, and Union Pacific (UP). Detailed profiles of these railroads are provided in Appendix B: Class I Railroad Profiles.

Forty-four miles within Minnesota are operated by Class II or "Regional" railroads. These railroads have smaller networks and operate within more limited areas when compared to Class I railroads. They have annual operating revenues of less than $1 billion, but more than $46 million, the threshold for a Class III or short line carrier.[5] The two regional railroads that serve Minnesota connect Minnesota with markets in adjoining or nearby Midwestern states.

Within Minnesota are 15 Class III or "short line" railroads (19 percent of the Minnesota rail network mileage). These are railroads with below $46 million in annual operating revenues. Short lines provide "last mile" rail service, connecting customers to the Class I rail network. Class I and Class II railroads can directly serve customers, but short line railroads usually specialize in “local” rail service, moving railcars to, from, within customer locations. The Class II and Class III rail network is summarized in Figure 2.

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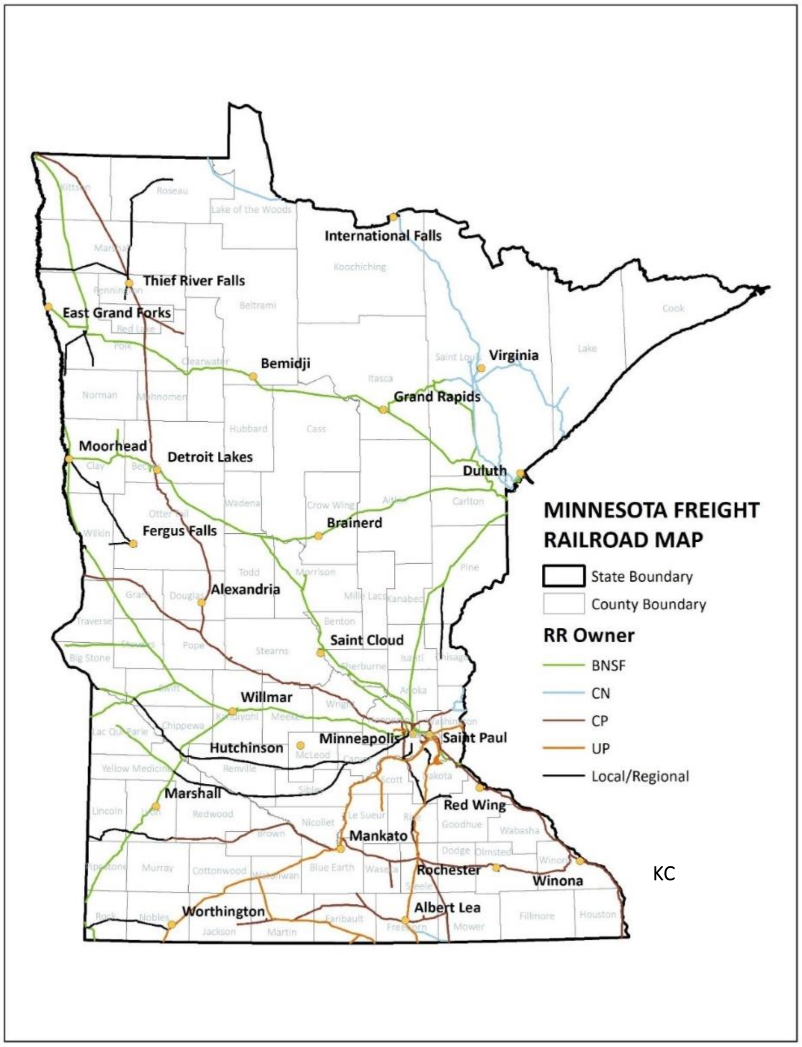
[3] Association of American Railroads, State Rankings, https://www.aar.org/wp-content/uploads/2021/02/AAR-State-Rankings-2019.pdf.

[4] For the purposes of this Plan, rail miles are associated with the railroad that operates that line. A railroad "operates" a rail line if it controls train movements or "dispatches" that rail line. For example if one railroad owns a rail line but then leases it to another railroad, the lessee operates the mileage, and the miles are associated with that railroad. Railroads also operate over each others' lines through trackage rights agreements. Because the railroad that grants the trackage rights controls train movements, it is considered to operate the line. The railroad that receives the trackage rights does not operate the rail line.

[5] The threshold for class of railroad is based on annual operating revenues of over $900 million per year for Class I railroads, between $40.4 and $900 million for regional railroads (Class II), and short line railroads (Class III) less than $40.4. These thresholds are based on 2019 dollars and are inflated annually. In 2024 the most recent available inflation factors are for 2022. Short line (Class III) railroads are further subdived into local and switching/terminal railroads. Switching or terminal railroads specialize in making up and breaking down trains, storing and classifying cars, serving industries within yard limits, and other related purposes. These movements are made at slow speed under special yard rules. Local short line railroads perform these functions too, but they also operate trains outside of yard limits. Switching and terminal railroads are considered Class III regardless of their annual revenue.

FIGURE 1. MINNESOTA RAIL NETWORK



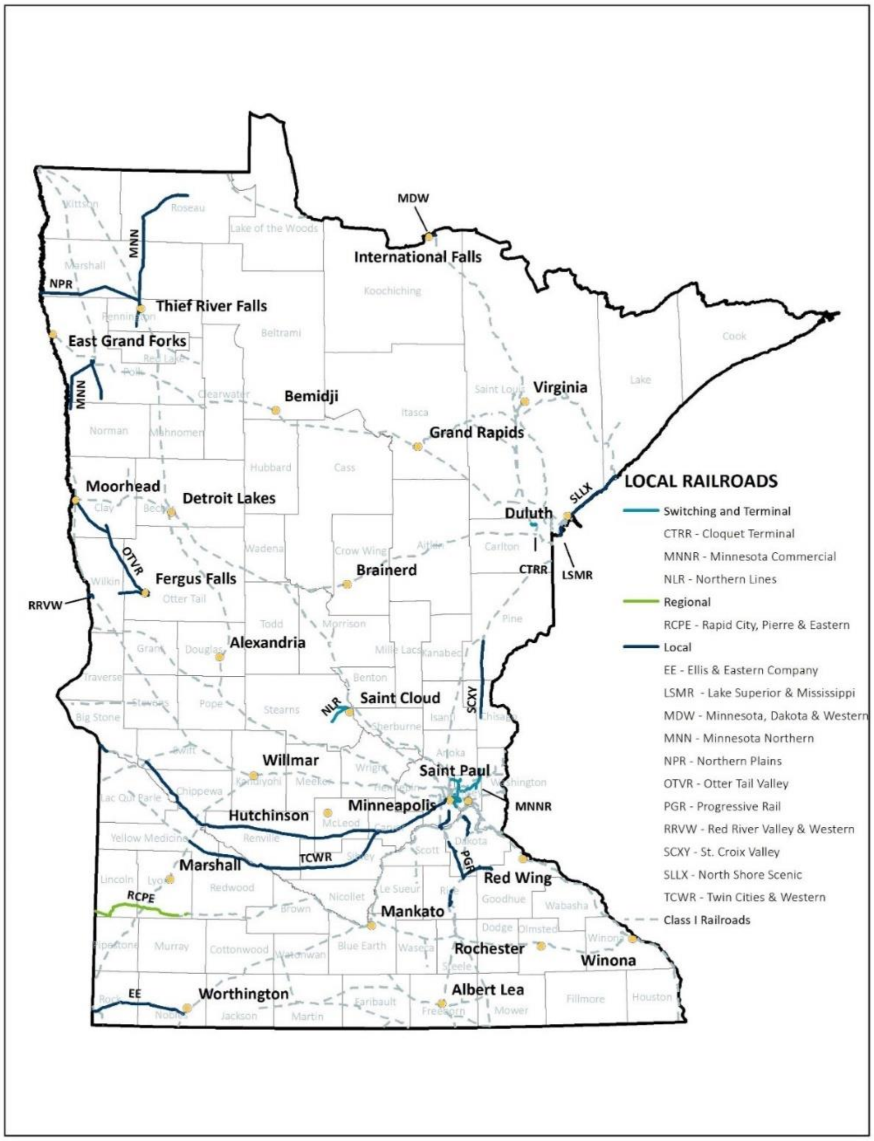
Source: MnDOT, FRA

TABLE 1. FREIGHT RAIL ROUTE MILES IN MINNESOTA

Railroad	Owned and Operated	Operated under Lease	Total Operated	Leased to Others	Trackage Rights
Class I Railroads					
BNSF Railway	1,480		1,480	9	222
Candian National Railway	378		378	0	0
CPKC	1,021		1,021	111	570
Union Pacific Railroad	402		402	16	226
Class I Total	**3,281**		**3,281**	**136**	**1018**
Regional Railroads (Class II)					
Rapid City, Pierre, & Eastern Railroad	41		41		131
Red River Valley & Western Railroad Company	3		3		29
Regional Railroad Total	**44**		**44**		**160**
Short Line Railroads (Class III)					
Cloquet Terminal Railroad	2	1	3		
Ellis & Eastern Company		42	42		
Lake Superior & Mississippi	5		5		
Minnesota Commercial Railway		86	86		42
Minnesota Northern & St. Croix Valley Railroads	165		165		
Minnesota, Dakota & Western Railway	2		2		
North Shore Scenic Railroad	28		28		
Northern Lines Railway		19	19		
Northern Plains Railroad, Inc.		46	46		
Otter Tail Valley Railroad	81		81		
Progressive Rail Inc., Cannon Valley Railroad	9	68	77		
Twin Cities & Western Railroad & Minnesota Prairie Line	144	81	225		11
Short Line Total	**436**	**343**	**779**		**53**
TOTAL - ALL RAILROADS	**3,761**	**343**	**4,104**	**136**	**1,231**

Source: Survey of short line, regional railroads, comparison to AAR MN profile, carrier websites, other sources.

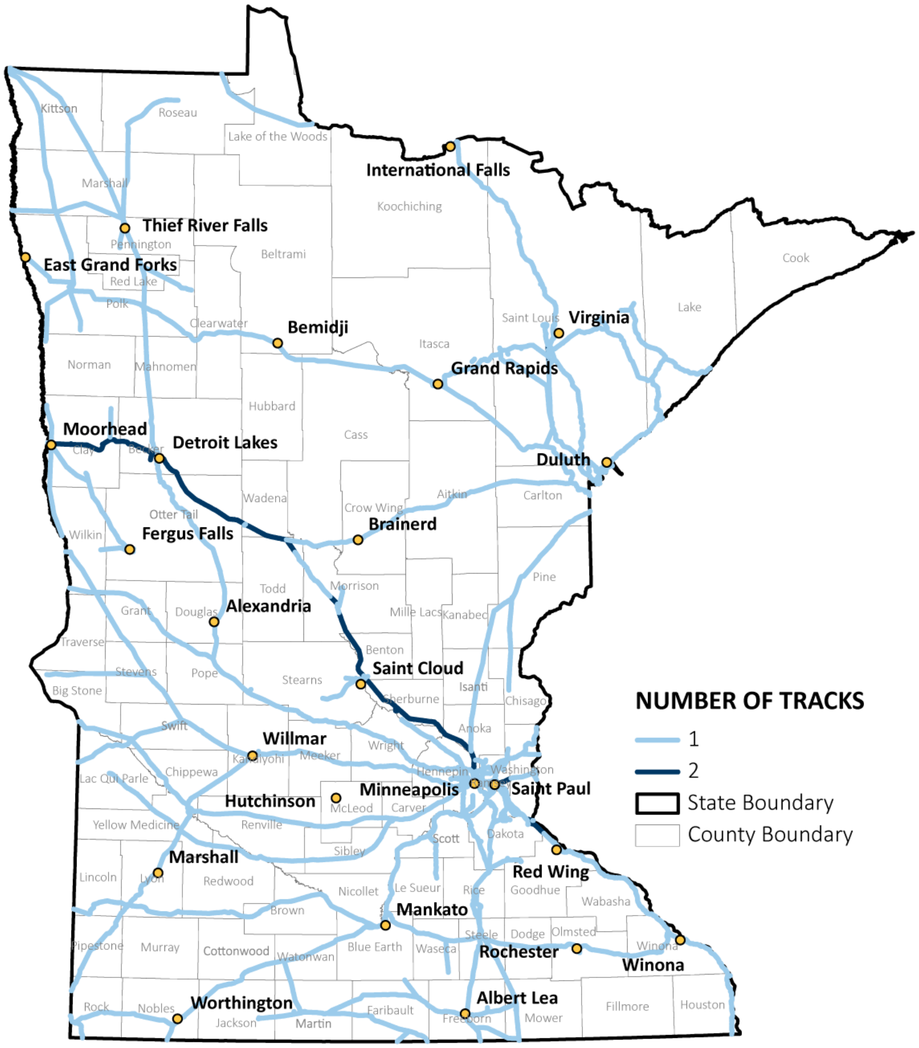
FIGURE 2. SHORT LINE/REGIONAL RAILROAD NETWORK



Source: MnDOT, FRA

Most rail lines in Minnesota consist of a single railroad track. When trains pass each other, they do so using passing sidings. One train uses a siding or a rail yard to wait for the other train to pass. If the capacity is needed and rail volumes justify the investment, railroads add a second track so that train traveling in each direction can pass one another without using a passing siding. Within Minnesota, most of the double track segments are located in the BNSF Great Northern corridor, which connects Chicago to the West Coast. This is shown in Figure 3.

FIGURE 3. NUMBER OF TRACKS

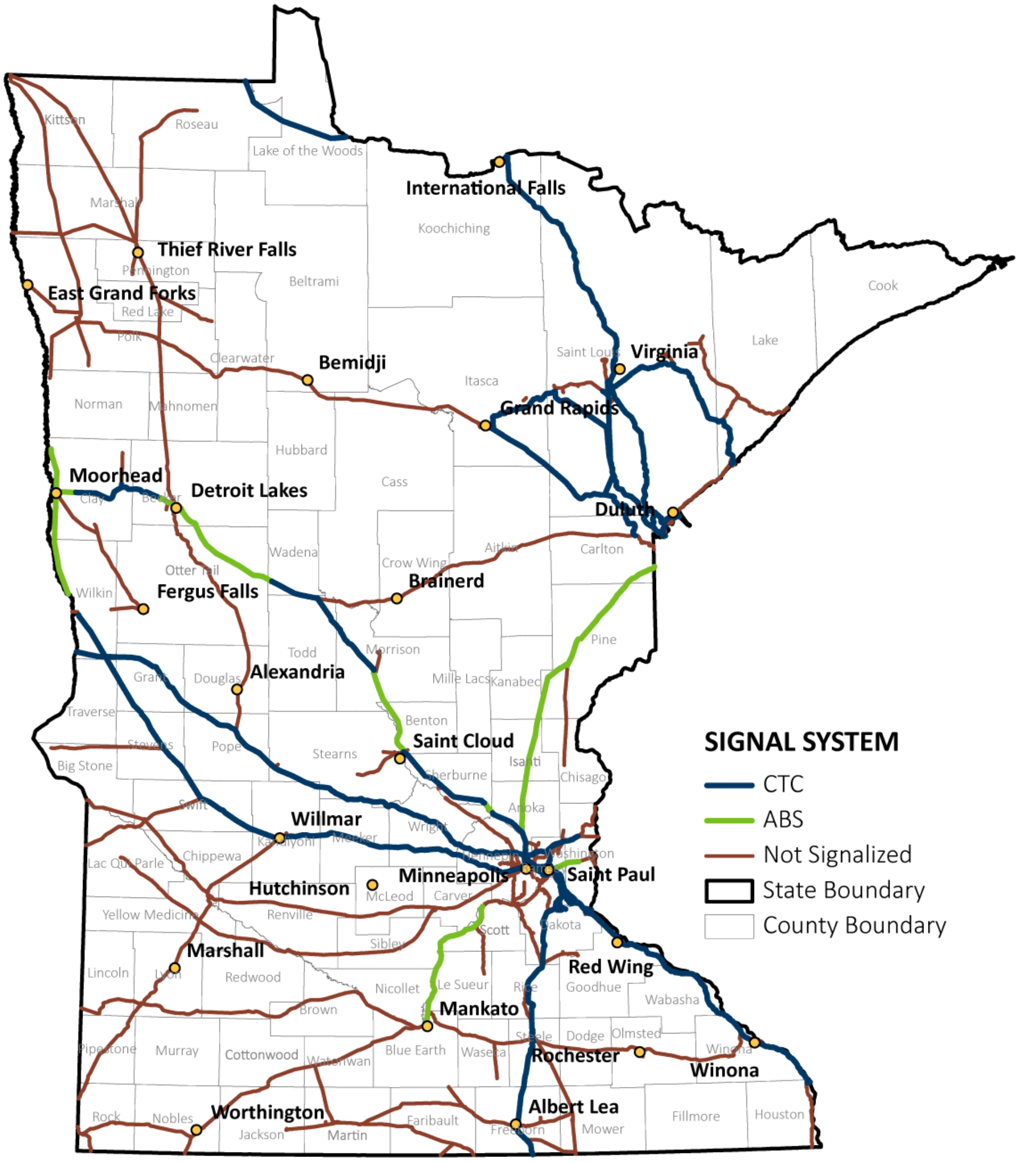


Source: MnDOT, FRA, WSP Analysis

Another important factor for rail line capacity is the train control system, the system by which trains safely gain authority to access segments of track. Rail lines with the highest volume and the most need for capacity are dispatched using centralized traffic control systems (CTC). Under these systems, train movements are monitored electronically by a central dispatch office. Dispatchers can remotely control railroad interlockings and traffic signals to ensure safe, efficient train movements.

For rail lines with moderate traffic density, railroads often rely on automatic block signaling (ABS), uses electronic circuits to control train movements. Trains receive automatic signals that indicate whether it is safe to enter or occupy segments or “blocks” of track. For rail lines of lower density, a range of dispatch systems are used, but these to not involve electronic signals as is the case for CTC and ABS. These may be dispatched by timetables, verbal authority provided by dispatchers, or other methods. Unsignalized territory is sometimes referred to as “dark territory”. As shown in Figure 4 a range of dispatch systems are used in Minnesota, but the dispatch systems tend to relate to rail line density per Figure 24.

FIGURE 4. TRAIN CONTROL SYSTEM

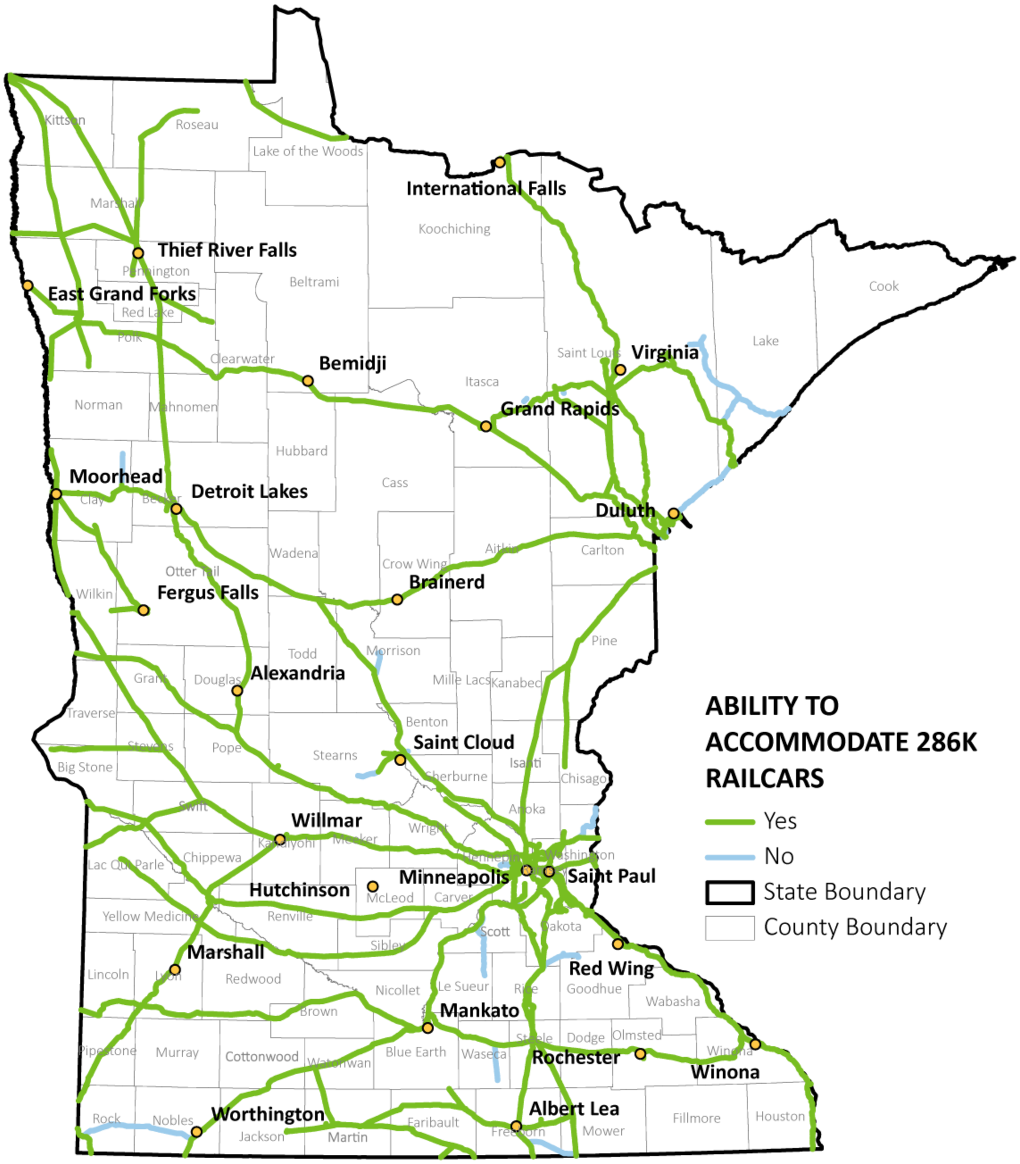


Source: MnDOT, FRA, WSP Analysis

In the 1990's the Class I railroad industry shifted the standard maximum railcar weight, increasing the standard used on U.S. rail lines from a previous standard of 263,000 pounds to 286,000 pound gross weight on rail (including both the weight of the railcar and its payload). The new standard increased the required maintenance for rail lines because the heavier railcars cause more damage to roadbed and bridges, but the additional maintenance cost was more than compensated by improvements in railcar handling efficiency. Because the relationship between railcar weight and payload (cargo) weight was more favorable for the new, larger railcars, each railcar could handle 10 to 12 percent more cargo, an improvement higher than the ratio of 286,000 to 263,000. More cargo could be carried with the same number of railcars, reducing the handling expenditure and resources needed for each railcar.

Unfortunately, a significant portion of the railroad infrastructure operated by short line railroads was not built to a standard that allows passage of 286,000 pound railcars.As the cost of upgrading the infrastructure, including bridges to this standard was high,these limitations persist. Within Minnesota 254 miles of track can still not accommodate 286,000 pound railcars, which places the railroads and shippers on these lines at a disadvantage. Previously, shippers/railroads could use older, smaller railcars which are less expensive to own or lease, but increasingly these older railcars are becoming unavailable, and shippers/railroads must use larger, more expensive railcars and partially load them. Although segments of 286,000 track in Minnesota are of relatively short mileage, they typically impact rail moves that are hundreds of miles long because it is prohibitively expensive to transfer cargo from one railcar to another. A limitation on one piece of the rail move impacts the entire rail move.

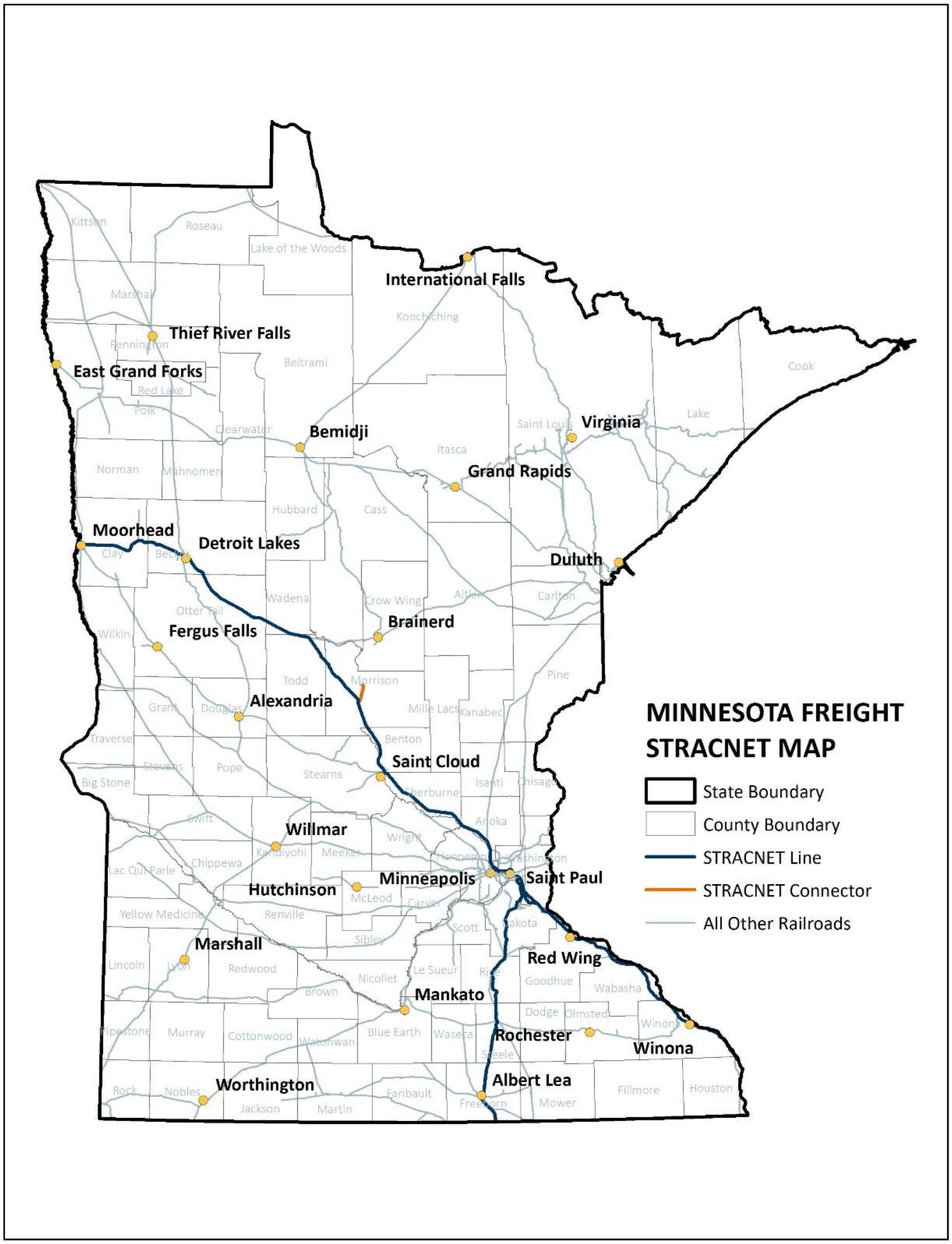
FIGURE 5. WEIGHT RESTRICTIONS



Source: MnDOT, FRA, WSP Analysis, Short Line Survey

The U.S. Department of Defense (DoD) in conjunction with the FRA established the Strategic Rail Corridor Network (STRACNET) to ensure DOD’s minimum rail needs are identified and coordinated with appropriate transportation authorities. The STRACNET is an interconnected and continuous rail line network consisting of over 41,300 miles of track serving 141 defense sites. STRACNET lines should be at least FRA Track Class 2, and STRACNET connectors should be at least FRA Track Class 1. STRACNET lines should be able to accommodate railcars and cargo that are 12 feet wide and 16 feet, 11 inches tall. STRACNET lines in Minnesota are shown in Figure 6, including a STRACNET Connector line that accesses the Minnesota National Guard’s Camp Ripley from Little Falls.

FIGURE 6. STRATEGIC RAIL CORRIDOR NETWORK (STRACNET)

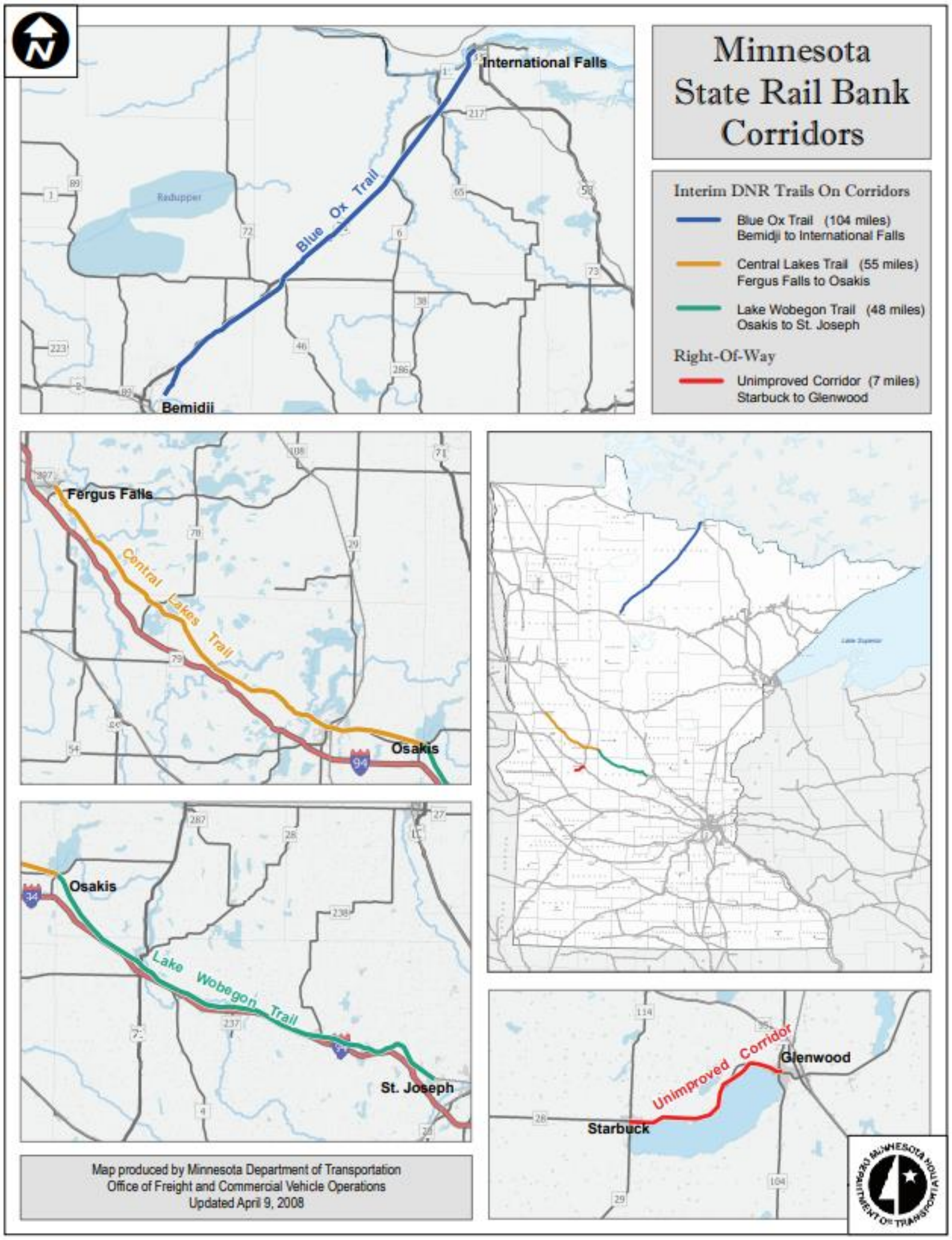


Source: U. S. Department of Defense

RAILBANKED CORRIDORS

The Minnesota legislature has granted MnDOT the authority to acquire abandoned rail lines and right-of-way for future public use, as a trail, or for commercial use that benefits the public. Collectively, these properties comprise the Minnesota State Rail Bank Corridors. Railbanking was established nationally through the National Trails System Act of 1983. Under railbanking, MnDOT may intervene during a rail corridor abandonment process before the STB. If negotiations are successful, the abandoning railroad transfers the corridor to the State of Minnesota and the corridor is given an “interim use” designation by which the corridor is used as an interim recreational trail until a railroad might need the corridor again for rail service. Railbanking is intended as a tool to preserve rail corridors, which without the railbanking process, could potentially be lost forever as a continuous transportation corridor. It would be much more difficult to reassemble a transportation corridor than to preserve it. While railbanking has succeeded in preserving rail corridors, very seldom does rail service return to these corridors once they have been established as recreational trails. Minnesota State Rail Bank Corridors are shown in Figure 7.

FIGURE 7. MINNESOTA STATE RAIL BANK CORRIDORS


Minnesota State Rail Bank Corridors
Interim DNR Trails On Corridors
Blue Ox Trail (104 miles) Bemidji to International Falls
Central Lakes Trail (55 miles) Fergus Falls to Osakis
Lake Wobegon Trail (48 miles) Osakis to St. Joseph
Right-Of-Way
Unimproved Corridor (7 miles) Starbuck to Glenwood
International Falls
Blue Ox Trail
Bemidji
Fergus Falls
Central Lakes Trail
Osakis
Lake Wobegon Trail
St. Joseph
Unimproved Corridor
Starbuck
Glenwood
Lake Superior
Map produced by Minnesota Department of Transportation
Office of Freight and Commercial Vehicle Operations
Updated April 9, 2008

Source: MnDOT Website

RAIL MULTIMODAL FREIGHT FACILITIES

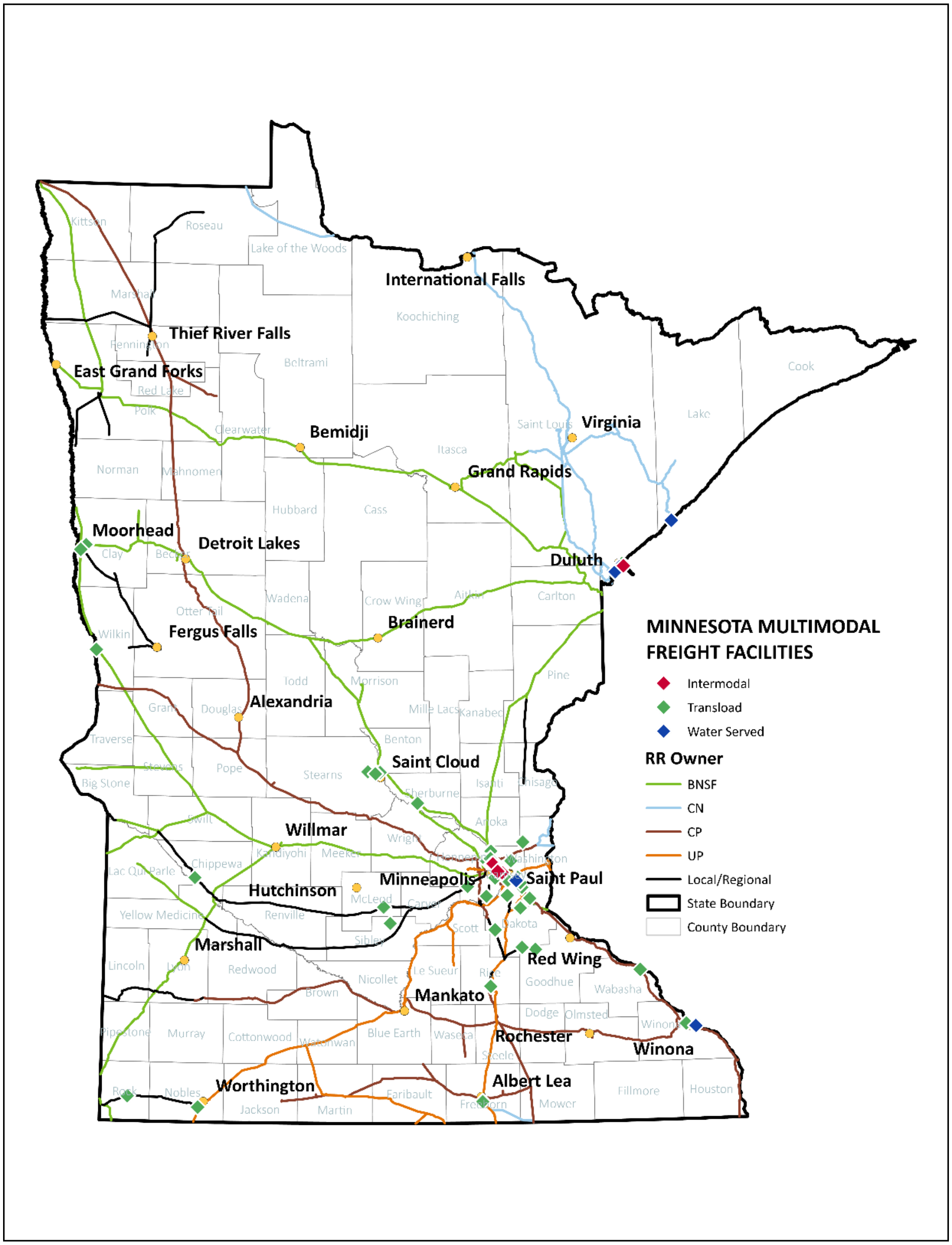
Multimodal facilities support the movement of freight between railroads and other modes of transportation like trucking and maritime shipping. These facilities play a critical role in Minnesota's transportation network because they allow shippers to utilize multiple modes of transportation in their supply chains, and multimodal facilities provide shippers that do not have direct access to rail track with the ability to use railroad shipping. For example, rail-served transload warehouses give companies that do not have direct rail service with the option to ship and receive goods in railroad boxcars, with trucks handling the first- or final-mile of freight movement to and from the transload warehouse.

The map below provides an overview of the multimodal freight facilities located in Minnesota. These facilities include four intermodal terminals, which support the movement of intermodal shipping containers and truck trailers on and off of railroad cars, 44 transload facilities that support the movement of a wide variety of non-containerized cargo, including dry bulk, liquid bulk, and break-bulk materials, and seven water-served multimodal facilities, which also handle a variety of cargo and connect to the Great Lakes or the Mississippi River systems. The map does not show grain elevators or individual industry facilities that have dedicated rail service for a single company.

The map below also illustrates how many of Minnesota's multimodal rail facilities are clustered around the Twin Cities and Duluth areas, which have traditionally been major transportation hubs and which are served by multiple major railroads. Multimodal freight facilities are often situated close to major transportation corridors such as interstates and trunk highways, because they facilitate easy truck connections.

Appendix D provides an inventory of identified transload and intermodal facilities in Minnesota. These facilities were identified based on surveys and consultations with railroads, as well as a review of railroad websites. Since the transportation industry is dynamic and ever-evolving, Figure 8 and the list in Appendix D may not cover all of Minnesota's multimodal freight facilities, and the specific types of commodities handled at each facility may change over time.

FIGURE 8. MULTIMODAL FREIGHT FACILITIES



Source: BNSF, CN, CPKC, UP transload and intermodal websites, consultations with Class I railroads, and short line railroad surveys. 2024.

HIGHWAY/RAIL CROSSINGS

According to the FRA crossing inventory database, a total of 4,138 public at grade crossings are located in Minnesota, of which 2,477 have passive grade crossing protection (crossbucks, stop signs, pavement marking, etc.) while 1,661 have active crossing protection as shown in Table 2. The percentage of crossings with gates and lights in Minnesota is approximately in line with that in the broader U.S. where about a third of crossings have gates and lights.

TABLE 2. HIGHWAY RAIL GRADE CROSSINGS BY CROSSING PROTECTION

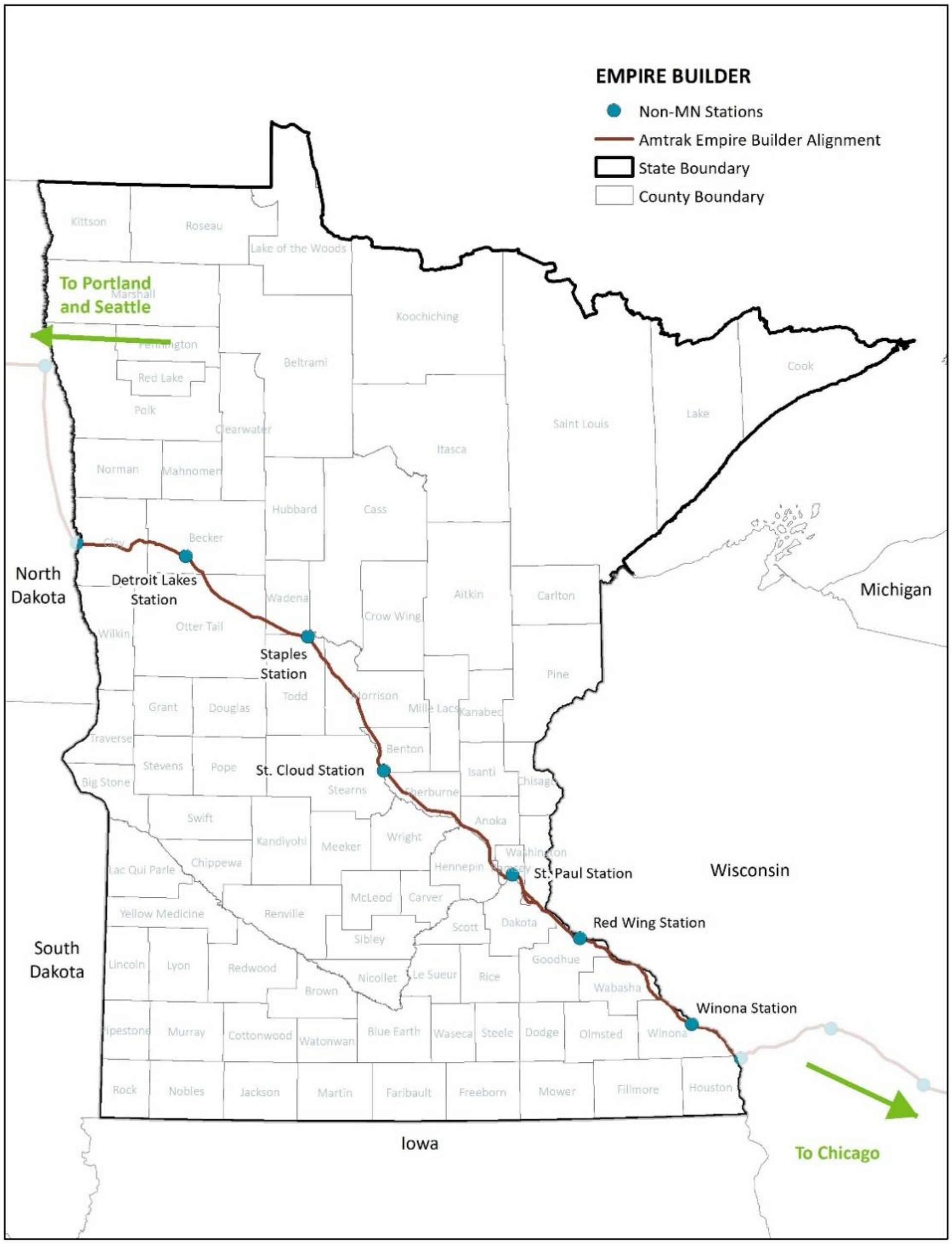
Type of Protection	Number of Crossings	Percentage
Passive Warning Devices	2,477	60%
Lights or other Signal without Gates	244	6%
Gates and Lights	1,417	34%
Total	4,138	100%

Source: FRA Crossing Inventory

INTERCITY PASSENGER RAIL SERVICES

Intercity passenger rail in Minnesota is provided by Amtrak’s Empire Builder service, whose route is shown in Figure 9. The Empire Builder is considered a “Long Distance” route because it is over 750 miles and the operating subsidies for the route are supported by the federal government, rather than state funding as is the case with “regional” Amtrak services less than 750 miles. The Empire Builder consists of a single daily train in each direction. Westbound trains arrive at Minnesota stations in the evening and at night, so that the trains arrive at the first Minnesota station, Winona, at 8:34 PM and then leaves the last Minnesota stop, Detroit Lakes, at 3:06 AM. Eastbound trains pass through Minnesota in the morning, arriving at Detroit Lakes at 4:27 AM, leaving Winona at 11:01 AM. St. Paul is by far the busiest of the six Amtrak stations in Minnesota, accounting for over two thirds of the ridership (68%) in 2022.

FIGURE 9. AMTRAK'S EMPIRE BUILDER ROUTE



According to the Rail Passengers Association, many of the city pairs with highest Amtrak ridership in 2022 were between St. Paul and other locations on the Empire Route within the Midwest, although Winona – Chicago was the third largest origin – destination pair. The top five origins/destination pairs were:

1. St. Paul – Chicago, IL
2. St. Paul – Milwaukee, WI
3. Winona – Chicago, IL
4. St. Paul – Fargo, ND
5. St. Paul – Minot, ND

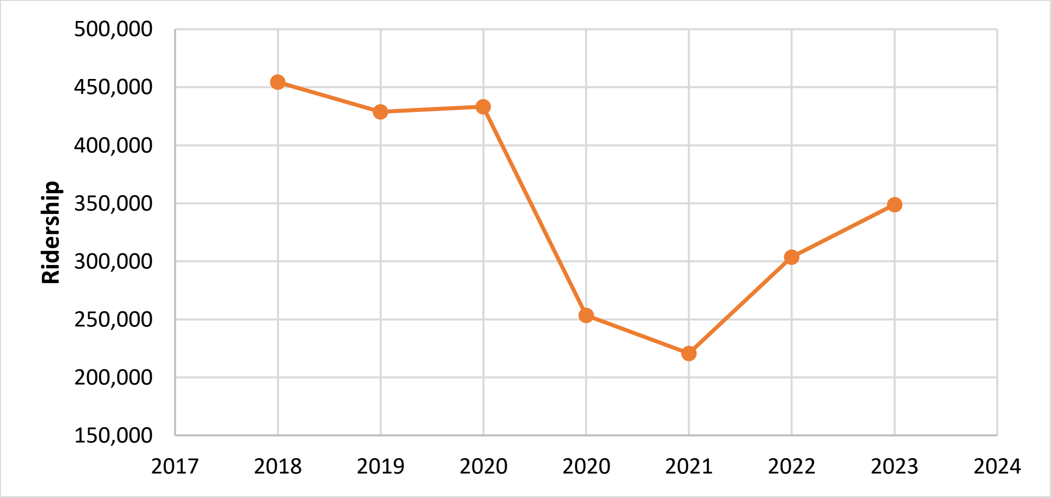
A comprehensive list of stations served by Amtrak's Empire Builder service is in Table 3.

TABLE 3. EMPIRE BUILDER INTERCITY STATIONS

Empire Builder Station	Weekly Frequency	Location Type	Transit Connection	Intercity Bus Connection	Parking	Non-Motorized Transportation Access
Winona	7 EB / 7 WB	Urban	Bus	None	Yes	None
Red Wing	7 EB / 7 WB	Urban	Bus	None	Yes	Bike Racks
St. Paul-Minneapolis	7 EB / 7 WB	Urban	Bus, Light Rail	Megabus, Greyhound, Jefferson Lines	Yes	Bike Racks
St. Cloud	7 EB / 7 WB	Urban	Bus	None	Yes	None
Staples	7 EB / 7 WB	Rural	None	None	Yes	None
Detroit Lakes	7 EB / 7 WB	Urban	Bus	None	Yes	None

Amtrak's Empire Builder experienced a decrease in ridership following 2020's COVID-19 Pandemic. However, as of 2023 the service regained 80 percent of its pre-pandemic ridership. Figure 10 displays the Empire Builder's ridership between 2018 and 2023.

FIGURE 10. EMPIRE BUILDER RIDERSHIP TRENDS



In addition to Ridership, the FRA measures the Empire Builder's performance using a metric titled Customer on Time Performance (COTP). COTP is the total amount of riders arriving at their destination on time (within 15 minutes of departure time) divided by the service's total riders. The FRA's published "Metrics and Minimum Standards for Intercity Passenger Rail Service"[6] requires an 80 percent COTP. Figure 11 shows that the service did not meet the FRA's performance standards between 2022 and 2023. COTP was worse for Train 8, which is the eastbound train to Chicago, than it was for Train 7, which is the westbound train to Seattle, WA/Portland, OR.

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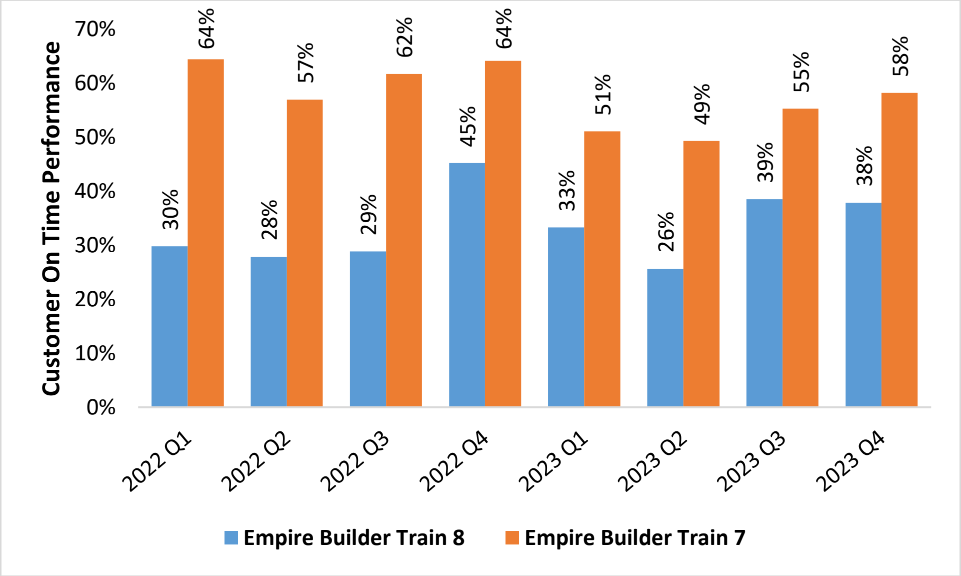
[6] https://railroads.dot.gov/legislation-regulations/regulations-rulemaking/metrics-and-minimum-standards-intercity-passenger

FIGURE 11. EMPIRE BUILDER COTP



Source: FRA

COMMUTER RAIL SERVICES

In 1988, a major investment study (MIS) identified commuter rail as the preferred roadway alternative for the downtown Minneapolis to St. Cloud, Minnesota corridor. This 80 mile prospective line was eventually shortened to to a minumum operating segment of 40 miles of active BNSF double-tracked mainline between Minneapolis and Big Lake, where the maintenance facility is located. Because of the preexisting double track, the project required only 0.7 miles of new track to be constructed, primarily surrounding the terminal stations. Preliminary engineering for the project began in June 2000, and the environmental review process concluded in December 2002, with issuance of a National Environmental Policy Act (NEPA) Record of Decision by the Federal Transit Administration (FTA). After resolution of state financial support, the shorter project entered final design (FD) in September 2006, received a Full Funding Grant Agreement (FFGA) in December 2007, and opened to service ahead of the FFGA schedule in November 2009.[7]

The Northsar line is now comprised of seven stations served by six locomotives with 18 passenger cars, and a new vehicle maintenance facility at the Big Lake terminus. The six commuter rail stations outside of downtown Minneapolis each have a park-and-ride lot and provisions for kiss-and-ride and bus access. The six park-and-ride lots have a total of 2,800 spaces. Each station platform is 425 feet long and has a mini-high platform that provides level boarding using a bridge plate for one car on each train.[8] Details of Northstar's commuter stations are listed in Table 4.

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[7] U.S. Department of Transportation: Federal Transit Administration, Northstar Corridor Rail Project Before-and-After Study (2013), pg. 24

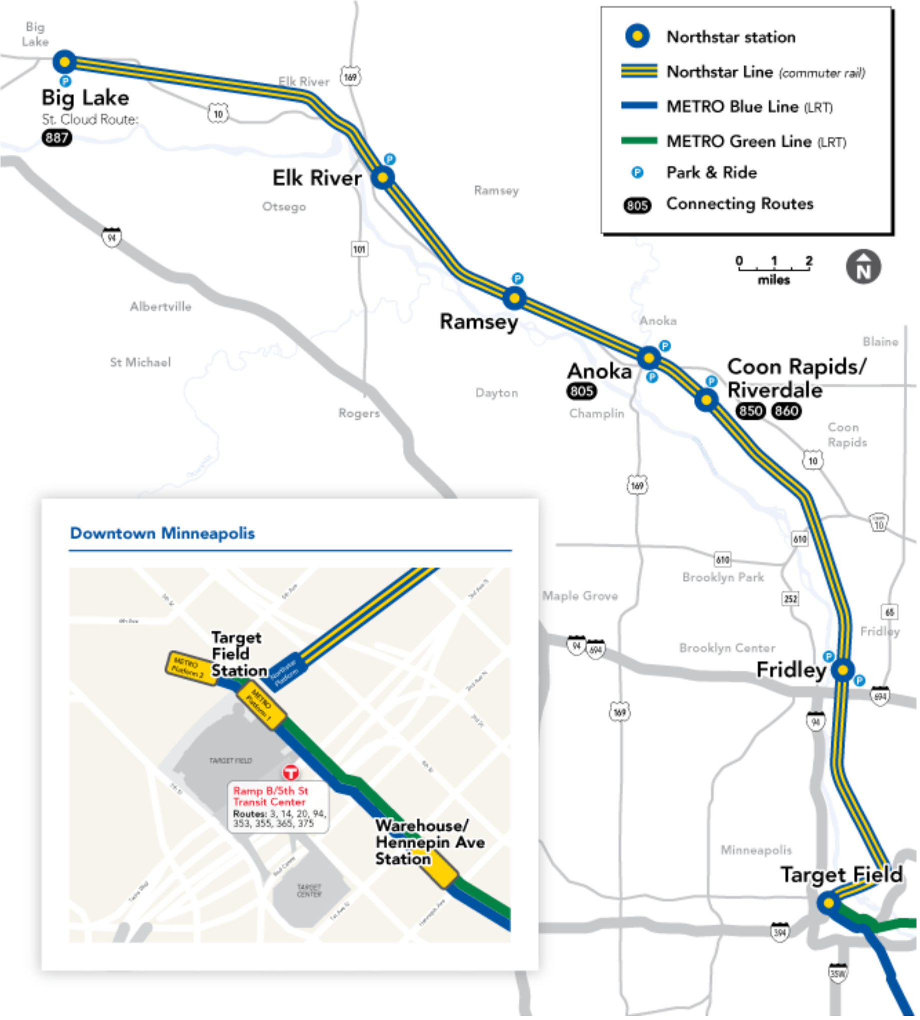
TABLE 4. NORTHSTAR COMMUTER STATIONS

Station	Weekly Frequency	Location Type	Transit Connection	Intercity Bus Connection	Parking	Non-Motorized Transportation Access
Target Field Station	20 NB / 20 SB	Urban	Light Rail, Bus	Greyhound	Yes	Bike Racks
Fridley Station	20 NB / 20 SB	Park & Ride	Bus	None	Yes	Bike Racks and Lockers
Coon Rapids-Riverdale Station	20 NB / 20 SB	Park & Ride	Bus	None	Yes	Bike Racks and Lockers
Anoka Station	20 NB / 20 SB	Park & Ride	Bus	None	Yes	Bike Racks and Lockers
Ramsey Station	20 NB / 20 SB	Park & Ride	Bus	None	Yes	Bike Racks
Elk River Station	20 NB / 20 SB	Park & Ride	None	None	Yes	Bike Racks and Lockers
Big Lake Station	20 NB / 20 SB	Park & Ride	None	Northstar Link	Yes	Bike Racks and Lockers

Metro Transit and BNSF Railway are partners in running the service. Metro Transit collects fares along with maintaining the stations and trainsets. BNSF Railway owns and maintains the tracks, and their crews operate the locomotives and provide the conductors for the passenger cars.

Northstar operates eight weekday trains (four northbound, four southbound). Except for one train in each direction, all service is geared towards morning commuters traveling from the city's northern suburbs into Minneapolis and returning in the evening. As of January 2024, the service does not operate during the weekends, apart from special trains for Minnesota Vikings home games. Figure 12 displays the Northstar route.

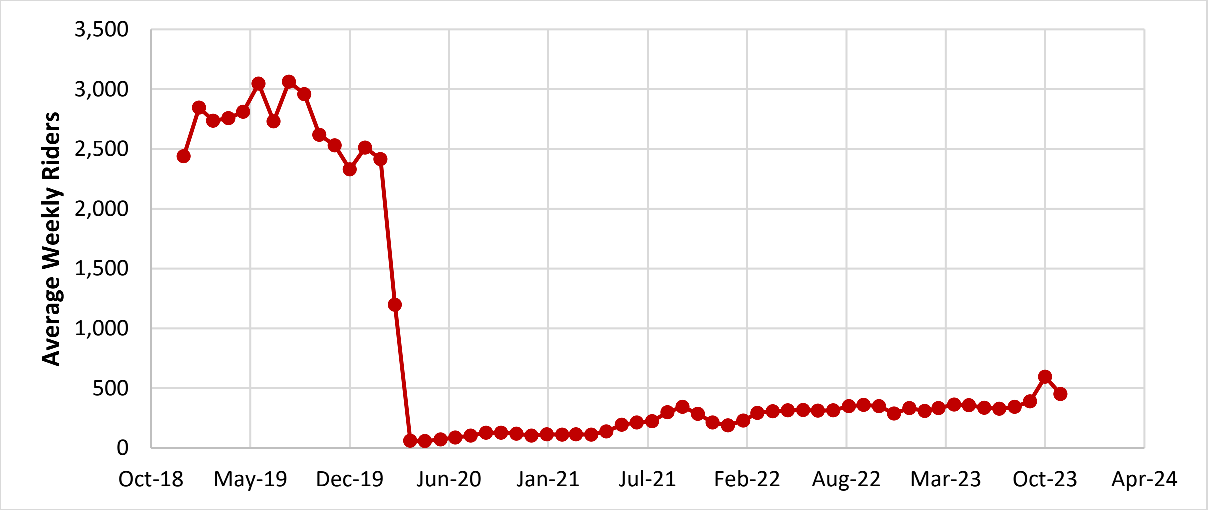
FIGURE 12. NORTHSTAR ROUTE



Source: Metro Transit

In early 2020 all services experienced a dip in ridership driven by the COVID-19 pandemic, which are yet to fully recover from. The service’s November 2023 average weekly riders only represent 17 percent of pre-pandemic levels. Figure 13 shows Northstar’s average weekly ridership between January 2019 and November 2023.

FIGURE 13. AVERAGE WEEKLY NORTHSTAR RIDERSHIP



Source: Metro Transit

RESILIENCY OF MINNESOTA'S RAIL NETWORK

Resiliency is increasingly recognized as an important consideration in transportation planning. Extreme weather presents a threat to rail infrastructure. The impacts can present serious safety hazards, necessitate costly repairs, and disrupt rail service and economic activity. In the decades ahead, climate change is expected to continue increasing the frequency and severity of many extreme weather events. To proactively manage and prepare for events, MnDOT has included an assessment of vulnerability to extreme weather events in this Plan. These vulnerabilities are discussed in the sections below.

FLOODING

Flooding impacts are broken out into two sections. The first focuses on impacts to rail lines themselves. The second focuses in on impacts to rail bridges.

RAIL LINES

Metric Used: *100-Year Floodplain* - Flooding poses a safety hazard and can lead to costly repairs of rail infrastructure. The assessment examined current climate flood exposure using the 100-year (one percent annual chance) floodplains assembled to support Minnesota's 2019 State Hazard Mitigation Plan (SHMP).[9] This dataset merged the best available Federal Emergency Management Agency (FEMA) 100-year floodplains (typically developed county-by-county) throughout the state and filled in the gaps for counties that did not have FEMA studies using Hazus, a high-level flood mapping and impacts analysis tool developed by FEMA.

Figure 14 shows potential 100-year flood exposure for rail lines. The flood exposure in the analysis may overstate risk in some areas because rail line elevation is shown at ground level, but some rail lines may be on bridges. About 4.4 percent of the rail lines in the state are potentially exposed to a 100-year flood. As can be seen in the figure, although most rail lines are at risk of flooding at a few locations or more, a major concern is the busy rail lines of Class I railroads along the Mississippi River and Minnesota River, where extensive flooding can inundate tracks at multiple locations. These lines are critical to the freight system of the state and cannot be easily bypassed.

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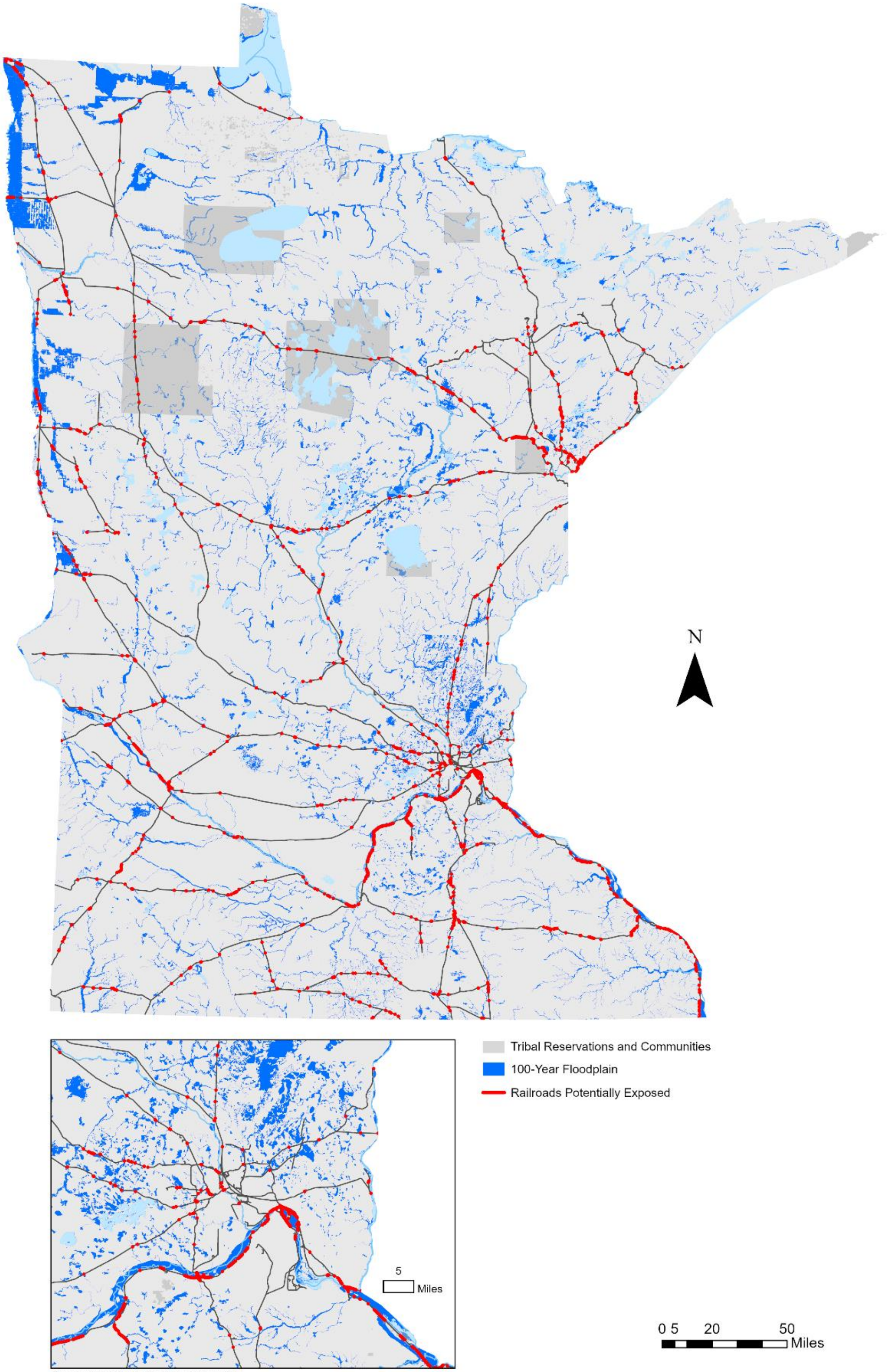
[9] https://dps.mn.gov/divisions/hsem/hazard-mitigation/Pages/state-hazard-mitigation-plan.aspx

Climate change is expected to increase the frequency and severity of extreme precipitation events throughout most of Minnesota exacerbating flooding frequency, severity, and extent. Maps reflecting these changes will be available in the coming years.

FIGURE 14. POTENTIAL 100-YEAR STORM FLOOD EXPOSURE FOR RAILROADS, PAST CLIMATE

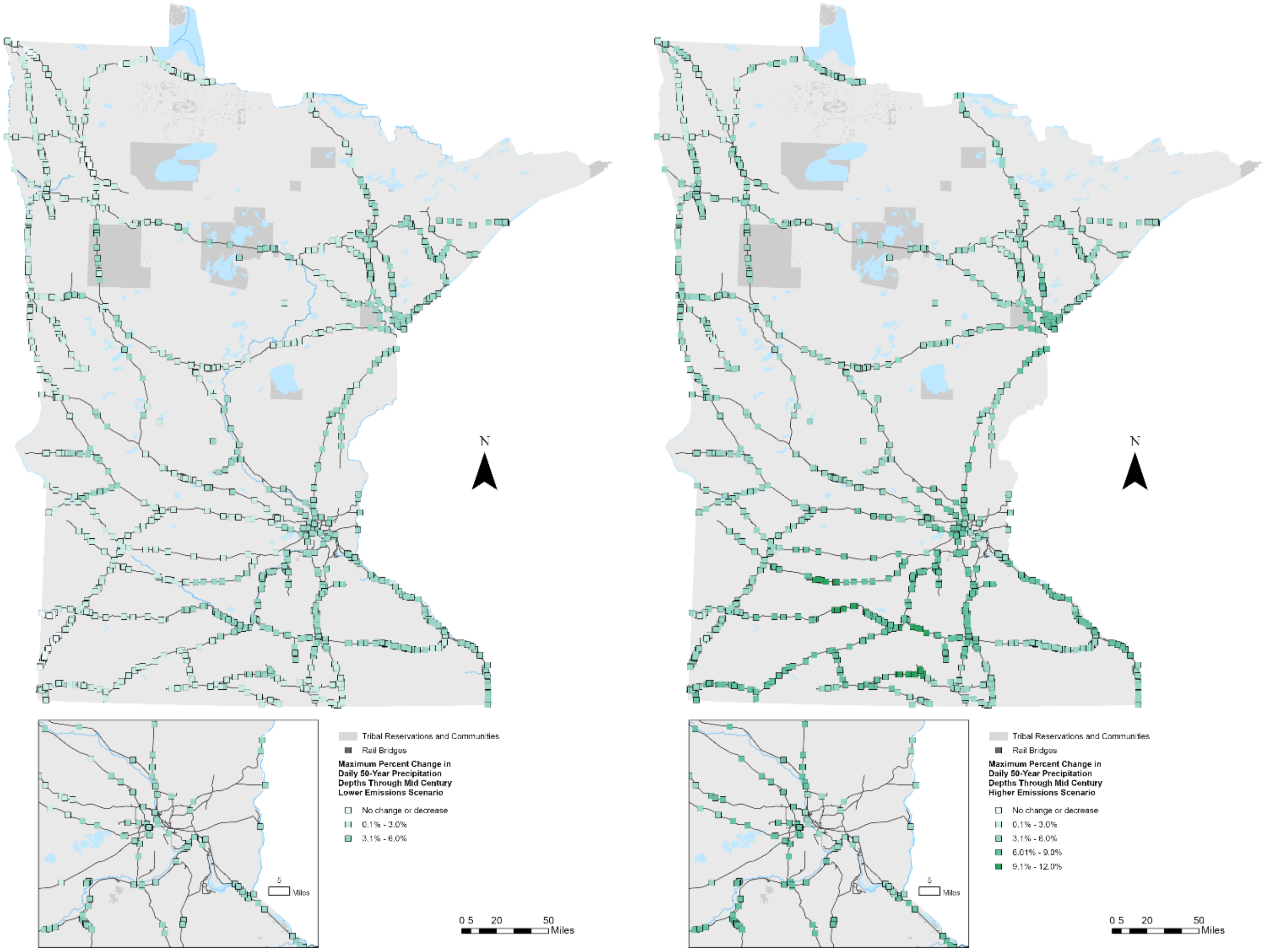

Tribal Reservations and Communities
100-Year Floodplain
Railroads Potentially Exposed
N
5
Miles
0 5 20 50
Miles

*Data source: 2019 Minnesota State Hazard Mitigation Plan

BRIDGES

Metric Used: Percent Change in 50-Year Precipitation by Watershed – Bridges over waterways are by their locations sensitive to flooding. The design standards for individual rail bridges are unknown and are products of the standards of railroads at the time they were built. To enable a uniform analysis, the change in the 50-year storm (the design storm for MnDOT roadway bridges over water) under climate change was considered for all rail bridges over water. The change in 50-year storm precipitation depths with climate change was computed by calculating the percentage change within the watershed of the stream/river each bridge crosses. The resulting map is shown in Figure 15 and a tabular summary can be found in Table 5.

FIGURE 15. MAXIMUM CHANGE IN DAILY 50-YEAR WATERSHED PRECIPITATION DEPTHS FOR BRIDGE OVER WATER THROUGH MID-CENTURY



Lower Emissions Scenario[10]

Higher Emissions Scenario

N
5
Miles
Tribal Reservations and Communities
Rail Bridges
Maximum Percent Change in Daily 50-Year Precipitation Depths Through Mid Century Lower Emissions Scenario
No change or decrease
0.1% - 3.0%
3.1% - 6.0%
0 5 20 50 Miles
N
5
Miles
Tribal Reservations and Communities
Rail Bridges
Maximum Percent Change in Daily 50-Year Precipitation Depths Through Mid Century Higher Emissions Scenario
No change or decrease
0.1% - 3.0%
3.1% - 6.0%
6.01% - 9.0%
9.1% - 12.0%
0 5 20 50 Miles

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[10] Climate scenarios are based on work by the Intergovernmental Panel on Climate Change. The high emissions scenario assumes that carbon dioxide emissions and atmospheric concentrations peak around 2040 and decrease afterward, so that carbon dioxide concentrations in the atmosphere are steady by 2100. Under the high emissions scenario, carbon dioxide emissions and atmospheric concentrations increase through 2100.

TABLE 5. AVERAGE PERCENTAGE CHANGE IN WATERSHED DAILY 50-YEAR PRECIPITATION DEPTHS FOR BRIDGES

Early Century		Mid-Century	
Lower Emissions Scenario	High Emissions Scenario	Lower Emissions Scenario	High Emissions Scenario
1%	3%	3%	5%

As the maps and table show, the severity and frequency of flooding impacts to bridges and culverts will likely rise as climate changes. Rail bridges were generally not designed with this change in mind. In terms of geographic patterns, the areas of greatest increase of precipitation are in the east and south of the state. This is especially pronounced in the higher emissions scenario and includes Duluth and St. Paul, while the area around Mankato sees the largest increases. Impacts are predicted for both Class I and short line railroad mainlines and shortlines will also see impacts in these areas.

WILDFIRE

Metric Used: Wildfire burn probability -Wildfire presents a threat to Minnesota's communities, travelers, and infrastructure. According to the 2019 SHMP, fires in Minnesota can be classified by their fuel source and setting: forest wildfires, prairie fires and peat fires occur in distinct regions throughout the state. **Error! Reference source not found.** indicates those locations (and railway assets) where wildfire is currently a pressing concern by showing the annual burn probability for different areas of Minnesota (the darker the color, the greater the probability of wildfire). This data comes from the Northeast-Midwest Wildfire Risk Explorer developed by the Northeast-Midwest State Foresters Alliance.[11] Areas with higher annual burn probability have fuels with a higher probability of experiencing forms of extreme fire behavior under conducive weather conditions, based primarily on the landscape conditions that existed at the time of map production.

The average annual burn probability along railroads in Minnesota is 0.000823 percent. In general, the wildfire threat is highest in an arc extending from northwest Minnesota to just north of the Twin Cities and in the Boundary Waters region of northeast Minnesota. Class I operated main lines passing through extended areas of highest wildfire risk include the CPKC (SOO) line in the northwest from Pennington to Kittson, the CN (WC) line just south of Ontario through Warroad and Baudette, and the CN (WC) line from Fort Francis, Ontario to Duluth through the Kabetogama State Forest.

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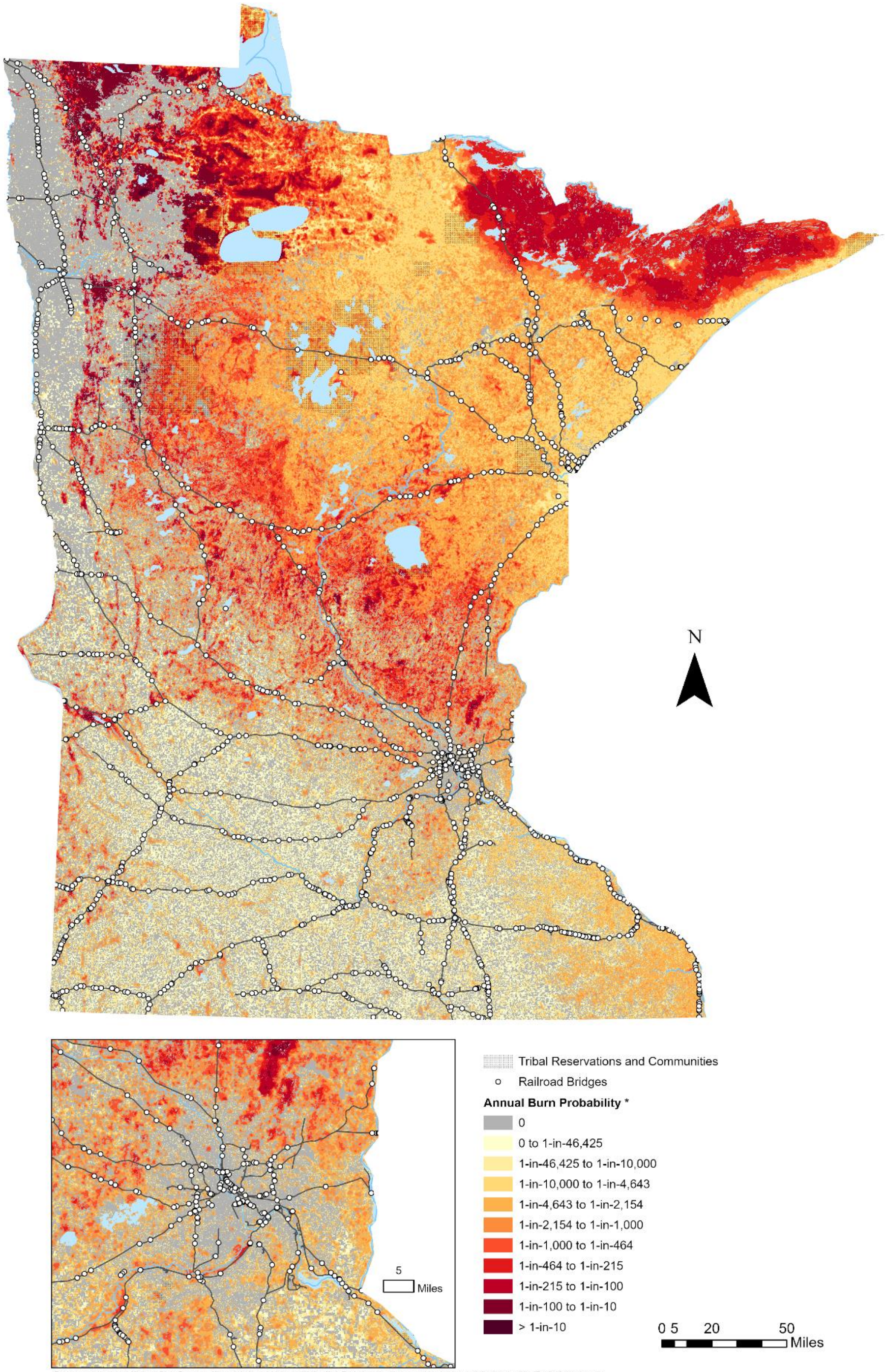
[11] See https://northeastmidwestwildfirerisk.com/ for the details of this modeling effort and for additional data.

FIGURE 16. ANNUAL WILDFIRE BURN PROBABILITY, PAST CLIMATE CONDITIONS



*Data source: Northeast-Midwest State Foresters Alliance Northeast-Midwest Wildfire Risk Explorer (https://wrap.northeastmidwestwildfirerisk.com/Map/Public/#map-themes)

RAIL LINES

Wildfires can destroy or damage railway assets via burning, in particular wooden ties, electronics, and signal equipment. Many strategies can be used to protect infrastructure from wildfire including removing nearby combustible material and using fire protective materials (e.g., concrete ties). Even if fire doesn't destroy railway infrastructure, the threat of it can impede railway operations leading to service disruptions.

BRIDGES AND CULVERTS

Wildfire experience from around the country has shown that one of the key post-fire effects is changes in flood risk in the burned watershed. Flooding can be enhanced for several years after a fire due to the hardening of the ground from the burning, the loss of vegetation and its ability to absorb rainfall, and debris and mudflows that can occur due to increased erodibility. All of this can present special flood hazards to bridges and culverts as post-fire conditions are typically not accounted for in their design. In addition, bridges and culverts (especially those made of wood or plastic) in the direct path of a fire may be incinerated or severely deformed by the blaze.

SLOPES

When heavy rains follow wildfires, the runoff can lead to erosion and mudslides that can threaten railway assets. As noted in the Minnesota SHMP, "documented and projected increases in the frequency and intensity of heavy and extreme rainfall suggest that Minnesota is becoming and will become more prone to post-fire landscape hazards."

KEY MINNESOTA RAIL ASSETS

One factor to consider when assessing resiliency is the harm that would be caused if a given rail asset were to be damaged or disabled. These are generally rail assets with a combination of the following characteristics:

- Performs a transportation function that would be difficult to repair or replace. It would be difficult to route around this asset if it were to be disabled, and it would be difficult to repair or replace the asset if taken out of service.
- Enables service, the disruption of which would cause a large impact. Either the asset is used by a high volume of freight/passenger service, and the service is important to those that use it.

Fortunately for Minnesota, many of the more heavily used corridors run roughly parallel to other corridors. Many of the state's rail lines converge in the Twin Cities, but multiple rail lines pass throught the Twin Cities. One of the busiest points of the Minnesota rail network is between St. Paul and Hastings, MN where the CPKC and BNSF transcontinental routes are adjacent to one another. These rail lines are within the flood plain as identified in Figure 14. Other key assets would tend to be the more heavily used, extensive bridges in the state, since these would be particularly costly to repair or replace if they were to be disabled.

RAIL AND MINNESOTA GOODS, PEOPLE MOVEMENT

RAIL'S ROLE IN MINNESOTA GOODS MOVEMENT

Railroads play a key role in the movement of good in Minnesota. The state has the 4th highest originating and terminating rail tonnage of any state in the nation.[12] However, the role that rail plays tends to be specialized and is used by specific industries and specific markets. As shown in **Error! Reference source not found.**, rail accounts for 20 percent of the tonnage that moves to/from/within Minnesota overall. However, rail's modal share is much higher for specific commodities, so that, for example, all coal shipped to Minnesota moves by rail. Ninety-one percent of metallic ore tonnage shipped to/from/within Minnesota move by rail as does 47 percent of basic chemicals tonnage.

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[12] Association of American Railroads State Rankings, https://www.aar.org/wp-content/uploads/2023/03/AAR-State-Rankings-2021.pdf.

Distance is also an important factor, although the relationship between distance and rail modal share is inconsistent. Nationwide, the economics of rail tend to favor use of rail for longer distance moves, so that overall in the U.S., rail only has a 3.5 percent modal share for movements less than 100 miles compared to 9.5 percent for moves over 100 miles.[13] However, in Minnesota rail is used for short distances shipments of iron ore from mining locations to port terminals, so rail has a higher or 22 percent modal share for tonnage shipments less than 100 miles. However, for other shipment distances to, from, within Minnesota, rail's use tends to increase with shipment distance, so rail has a higher modal share for shipments over 500 miles compared to shipments between 100 and 500 miles.

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[13] Based on 2023 data from the U.S. Federal Highway Administration Freight Analysis Framework (FAF-5) database.

TABLE 6. RAIL MODAL SHARE BY COMMODITY AND MILEAGE RANGE TO/FROM MINNESOTA, 2019

Commodities	Rail Tons	Rail Modal Share						All Mode Tons
		0 – 99 Miles	100 – 249 Miles	250 – 499 Miles	500 – 999 Miles	1,000 + Miles	All Mileage Ranges	
Metallic ores	53,649,721	100%	99%	0%	41%	79%	91%	**58,713,423**
Coal	11,486,590	Not applicable	Not applicable	96%	100%	Not applicable	100%	**11,490,930**
Cereal grains	11,406,674	2%	1%	9%	60%	62%	11%	**103,668,955**
Animal feed	4,672,747	3%	1%	12%	54%	75%	16%	**29,401,797**
Basic chemicals	4,628,291	13%	22%	61%	73%	77%	47%	**9,925,589**
Other agricultural products	3,616,890	0%	2%	2%	36%	70%	8%	**43,834,888**
Other foodstuffs	3,612,164	5%	4%	18%	31%	28%	14%	**26,072,538**
Natural sands	3,210,128	3%	43%	56%	57%	42%	22%	**14,388,957**
Coal-n.e.c.	2,938,526	2%	5%	16%	67%	91%	16%	**18,762,280**
Nonmetallic minerals	2,882,855	17%	6%	16%	16%	44%	17%	**16,494,791**
Mixed freight	2,208,200	0%	0%	22%	1%	81%	15%	**14,314,917**
Fertilizers	1,979,122	7%	21%	34%	44%	36%	25%	**7,798,606**
Other	12,095,948	1%	3%	9%	15%	22%	5%	**238,695,535**
GRAND TOTAL	**118,387,856**	**22%**	**5%**	**12%**	**47%**	**48%**	**20%**	593,563,206

Source: STB 2019 Waybill Sample, Quetica's Freight Intelligence Tracker (QFIT)

Rail helps to connect Minnesota to global markets and is particularly important for Minnesota's exports. As shown in Table 7, over half of Minnesota's agricultural exports and metallic ore (taconite) exports move by rail. Rail is also important for exporting animal feed.

TABLE 7. RAIL MODAL SHARE OF IMPORTS AND EXPORTS TO AND FROM MINNESOTA, BY IMPORT/EXPORT COMMODITY, 2019

	Exports from Minnesota			Imports from Minnesota		
	Rail		Total Commodity Tons – All Modes (000s)	Rail		Total Commodity Tons – All Modes (000s)
	Tons (000s)	**Share of Commodity Tons**		**Tons (000s)**	**Share of Commodity Tons**	
Metallic ores	3,757	54%	6,995	4	3%	134
Cereal grains	3,056	55%	5,580	99	42%	235
Other agricultural products	2,510	53%	4,709	16	2%	1,005
Animal feed	1,159	35%	3,339	90	36%	248
Fertilizers	60	23%	257	389	49%	793
Other foodstuffs	195	18%	1,058	73	10%	724
Base metals	4	9%	49	227	24%	952
Gasoline	144	19%	758	84	10%	845
Fuel oils	13	12%	110	125	8%	1,475
Plastics/rubber	19	8%	249	95	14%	678
Nonmetallic mineral products	61	7%	863	18	3%	546
Crude petroleum		0%	-		0%	11,091
Other	1,064	31%	3,478	1,574	22%	7,197
GRAND TOTAL	12,044	44%	27,445	2,794	11%	25,924

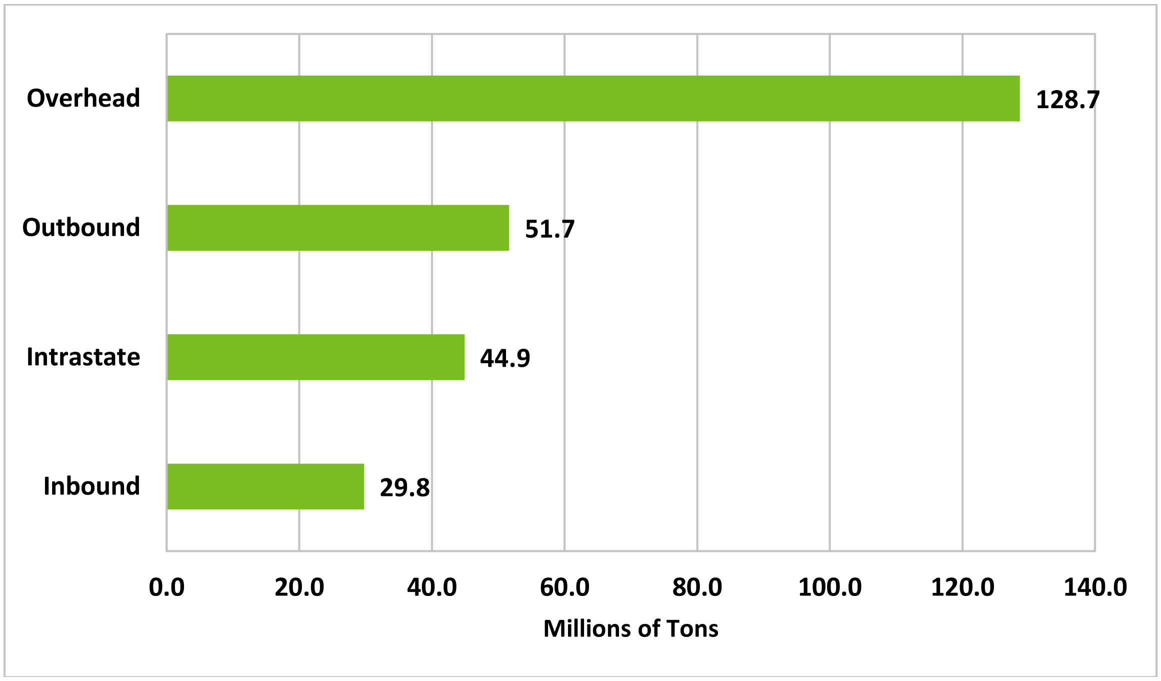
Source: MnDOT QFIT Data

RAIL FREIGHT FLOWS

Minnesota's rail flows have been analyzed using the U.S. Surface Transportation Board (STB) Carload Waybill Sample, which is a sample of waybills (documents that accompany rail shipments) for rail carriers that terminate 4,500 or more carloads per year. Due to confidentiality requirements, information can only be displayed at an aggregate level and not in detail.

As shown in Figure 17, the largest share of freight handled by the Minnesota rail network is passing through Minnesota between other states (overhead). Minnesota also has a sizeable volume of intrastate traffic, primarily consisting of metallic ores moving between mines and harbors. More freight rail taffic moves from Minnesota to other states (outbound) than moves from other states to Minnesota (inbound).

FIGURE 17. MINNESOTA RAIL TRAFFIC BY DIRECTION, 2019 TONS



Source: STB 2019 Carload Waybill Sample

FREIGHT FLOWS ORIGINATING FROM MINNESOTA

Iron ores (specifically taconite) represent the largest tonnage originating[14] from Minnesota, accounting for over half of total tonnage. While most of these flows stay within Minnesota moving to port facilities, the rest move to locations in Wisconsin and Illinois. Farm products, at 14 percent of tonnage, are the second highest source of rail flows originating in Minnesota. Most of this category is comprised of corn movements, primarily to California and Illinois, and flows of soybean to Washington state. Manufactured food products are the next major source of flows, accounting for 10 percent of originating tonnage and consist of corn syrup, soybean oil and vegetable oil moves to locations across the nation, particularly Texas, Illinois and California. Shipments of hazardous materials such as flammable ethanol and alcohols as well as asphalt tar constitute 6 percent of originating tonnage, while nonmetallic mineral moves of sand (to Texas, North Dakota, Colorado and Oklahoma), and crushed stone (remaining within Minnesota) represent the fifth largest commodity category originating by rail from Minnesota.

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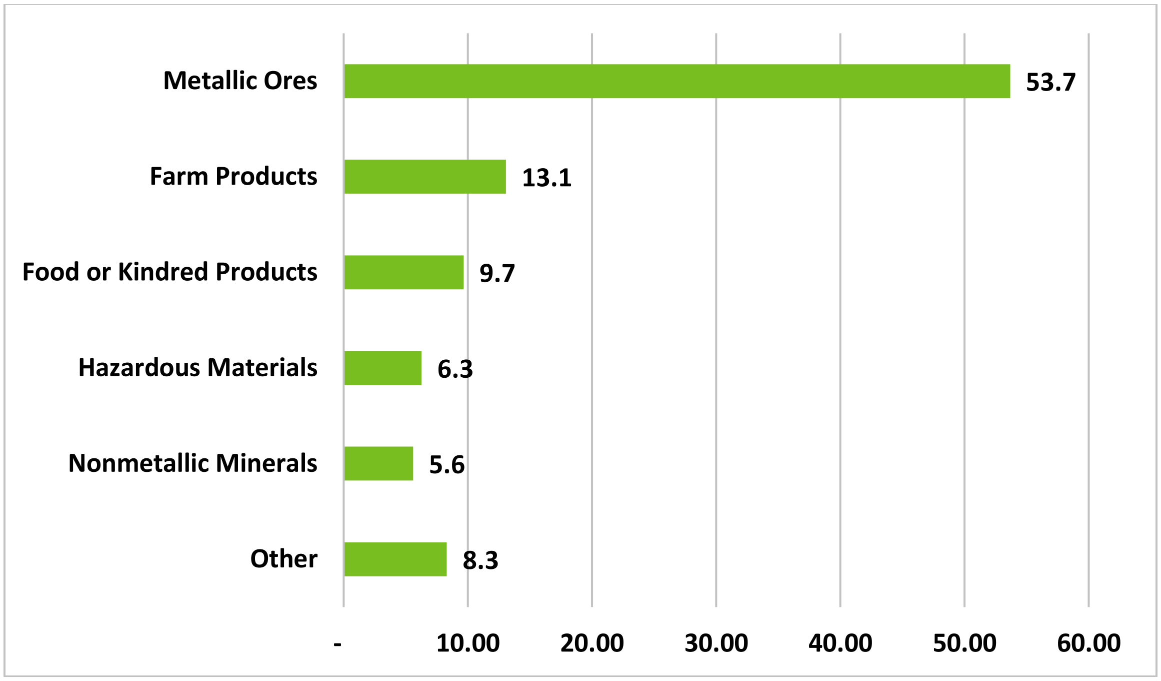
[14] Originating include freight movements that are either intrastate or moving outbound from Minnesota to other states.

FIGURE 18. MINNESOTA ORIGINATING RAIL TRAFFIC BY COMMODITY, 2019 TONS



Source: STB 2019 Carload Waybill Sample

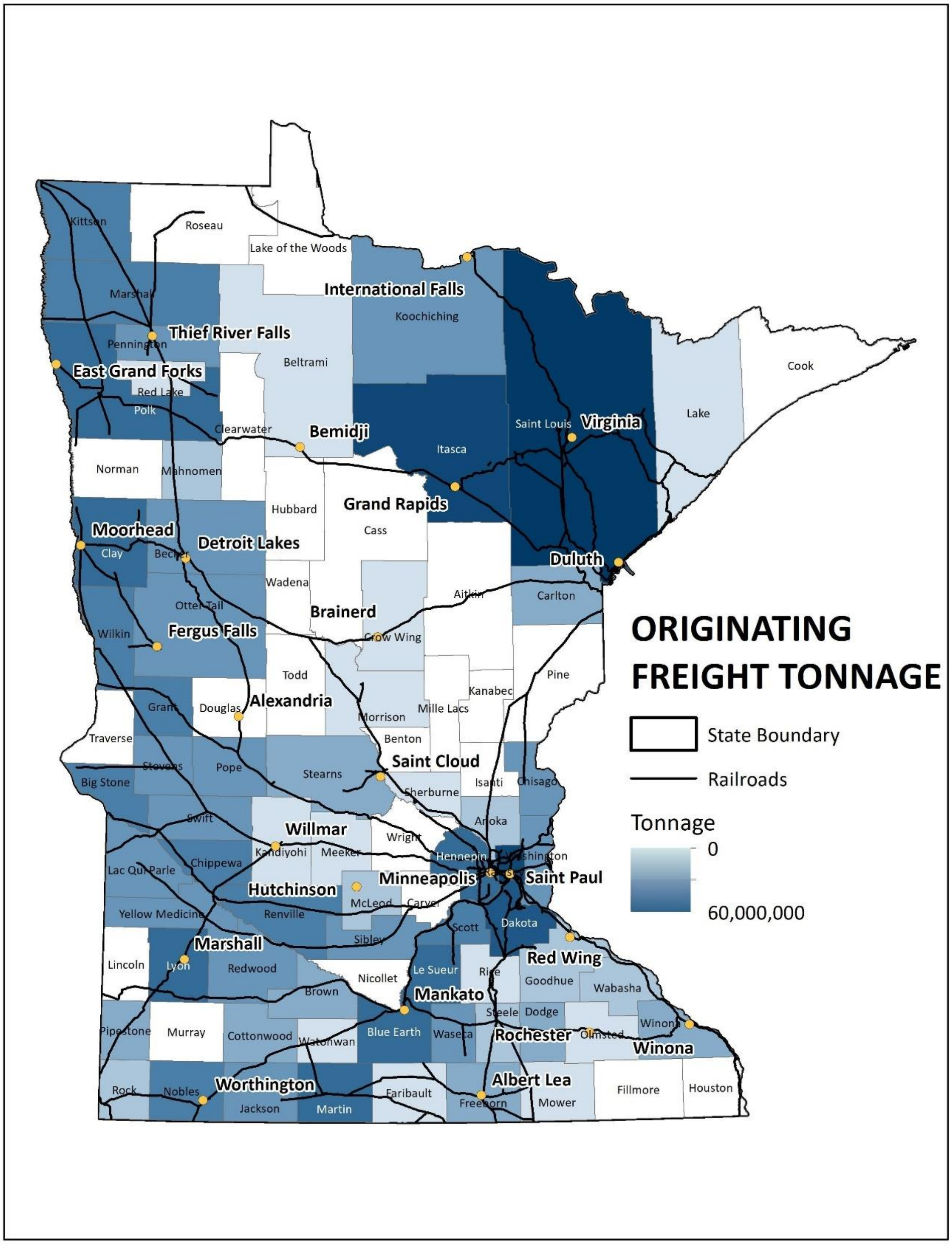
As shown in Figure 19, St. Louis County has the highest originating tonnages in the state, with the vast majority of tonnages being intrastate moves of metallic ores, as well as outbound moves of metallic ores to Wisconsin. St. Louis County also originates nonmetallic minerals, paper products and farm products.

Ramsey County (includes St. Paul) is the second largest source of rail flows in the state, including outbound movements of food products to Illinois, Texas, New Mexico, Washington; outbound moves of chemical products to Texas, Iowa, Missouri; intrastate moves of chemical products; and outbound moves of hazardous materials to Texas and Illinois.

Itasca County is the third largest source of rail flows in the state, mostly metallic ore movements to Wisconsin, Illinois, other parts of Minnesota, paper movements to Wisconsin.

Blue Earth County (includes Mankato) and Dakota County (of the Twin Cities metro) round up the top five counties by originating tonnage. Significant moves include food products to Illinois and Texas and petroleum products to Ontario, Canada.

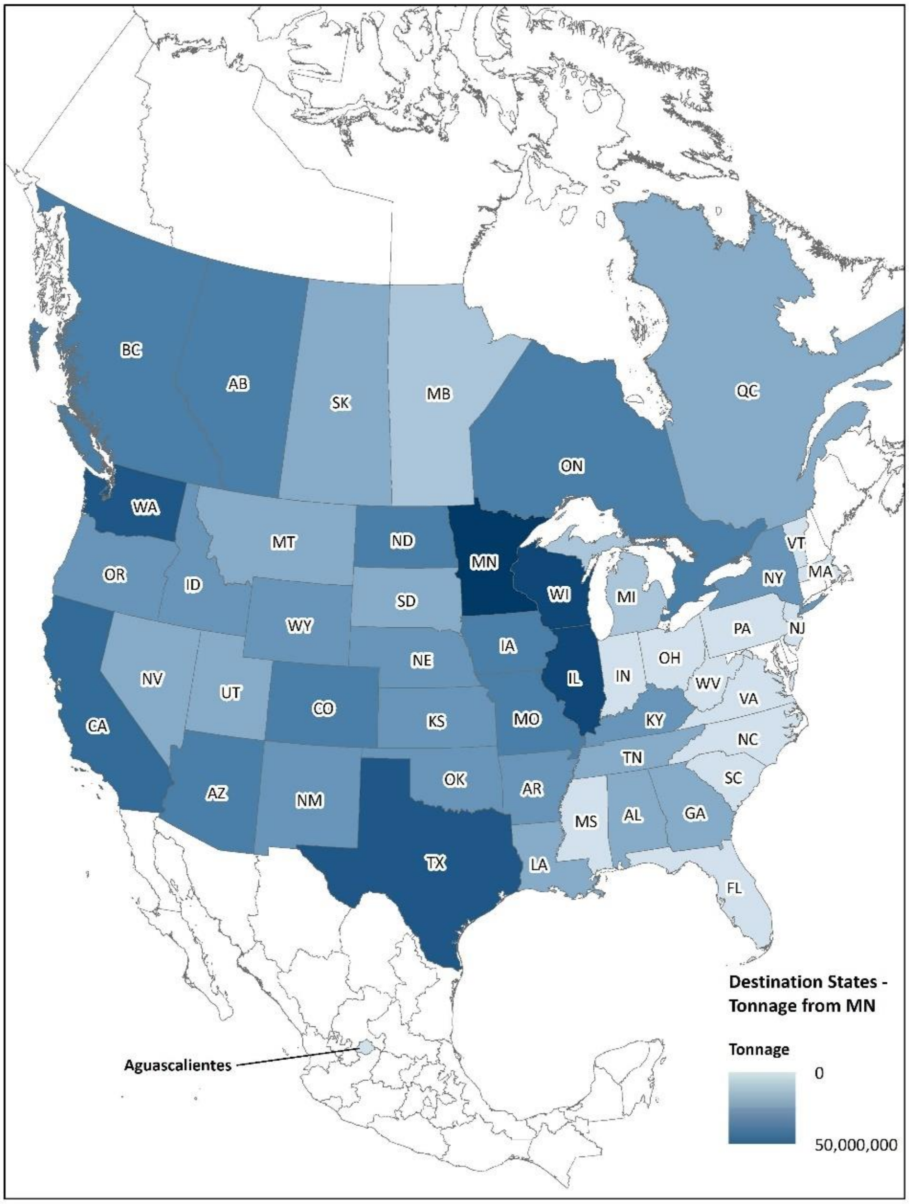
FIGURE 19. ORGINATING RAIL TRAFFIC BY MINNESOTA COUNTY, 2019 TONS



Source: STB 2019 Carload Waybill Sample

As shown in Figure 20, Illinois, Wisconsin, Texas, Washington and California are the largest recipients of rail flows outbound from Minnesota. Minnesota sends a wide variety of commodities by rail to Illinois, including food products, metallic ores, hazardous materials, farm products and paper products. These moves either terminate in Illinois or continue from Chicago to points east. Wisconsin primarily receives metallic ores from Minnesota, while Washington and California primarily receive food products and farm products. Outbound moves to Texas are mostly comprised of food products, hazardous materials and nonmetallic minerals.

FIGURE 20. DESTINATION OF MINNESOTA RAIL TRAFFIC BY STATE/PROVINCE, 2019 TONS

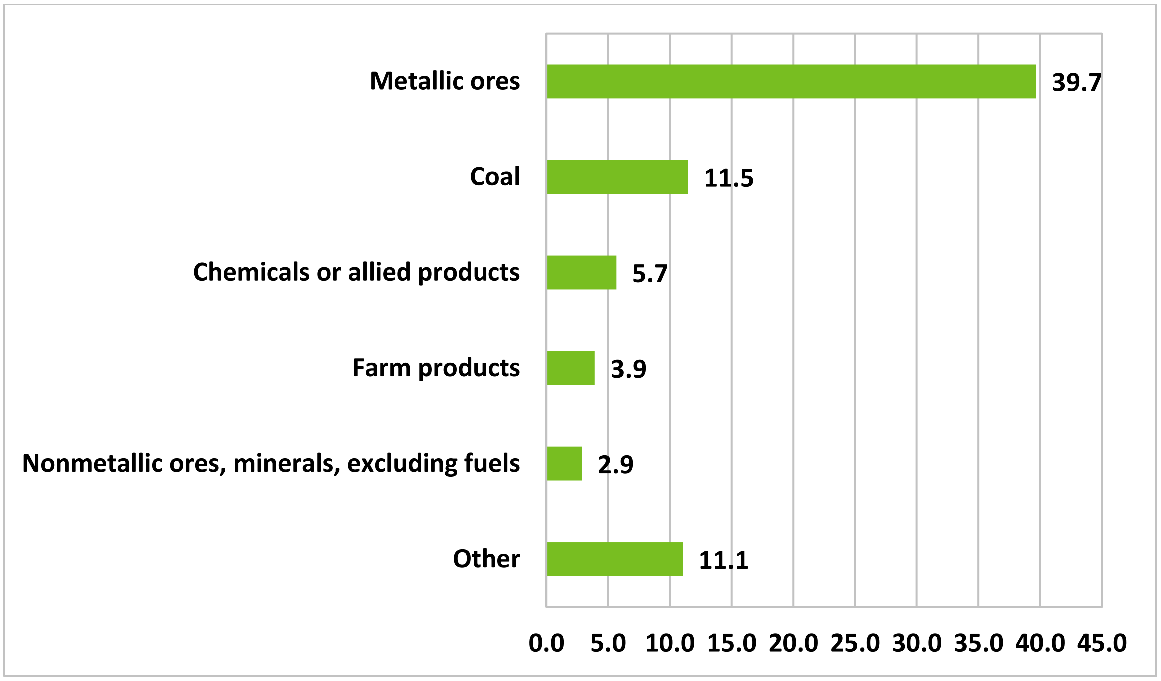


Source: STB 2019 Carload Waybill Sample

FREIGHT FLOWS TERMINATING IN MINNESOTA

As shown in Figure 36, iron ores (specifically taconite) comprise the largest component of terminating moves to Minnesota, accounting for over half of total tonnage. All terminating iron ores are intrastate flows, which is why this category also tops the originating commodity categories. Inbound moves of bituminous coal from Wyoming and Montana account for 15 percent of total terminating tonnage, while a variety of chemical products such as potassium compounds (from Saskatchewan and Manitoba), plastic materials (from Alberta and Texas), fertilizer (from primarily Florida) and other industrial chemicals (from various states) together comprise 5 percent of terminating tonnage. Farm products account for another 5 percent of terminating tonnage including wheat (from North Dakota, South Dakota, Montana and Saskatchewan), oats (from Manitoba), and Barley (from North Dakota and Montana), soybeans from South Dakota, and intrastate moves of corn, wheat and barley. Hazardous materials account for 4 percent of terminating tonnage, consisting of petroleum products from Alberta and North Dakota, sulphuric acid moves from Indiana and British Columbia and intrastate moves of ethanol.

FIGURE 21. MINNESOTA TERMINATING RAIL TRAFFIC BY COMMODITY, 2019 TONS



Source: STB 2019 Carload Waybill Sample

As shown in Figure 22, St. Louis county has the highest terminating[15] tonnages in the state, with the vast majority of tonnages being intrastate moves of metallic ores and nonmetallic minerals, as well as inbound moves of clay/concrete/glass/stone from Wyoming.

Lake County is the second largest recipient of rail flows in the state by tonnage. Almost all flows are intrastate moves of metallic ores.

Sherburne County is the third largest recipient of rail flows into the state by tonnage with most of the terminating tonnages consisting of coal shipments from Wyoming and Montana to the Sherburne County Generating Station

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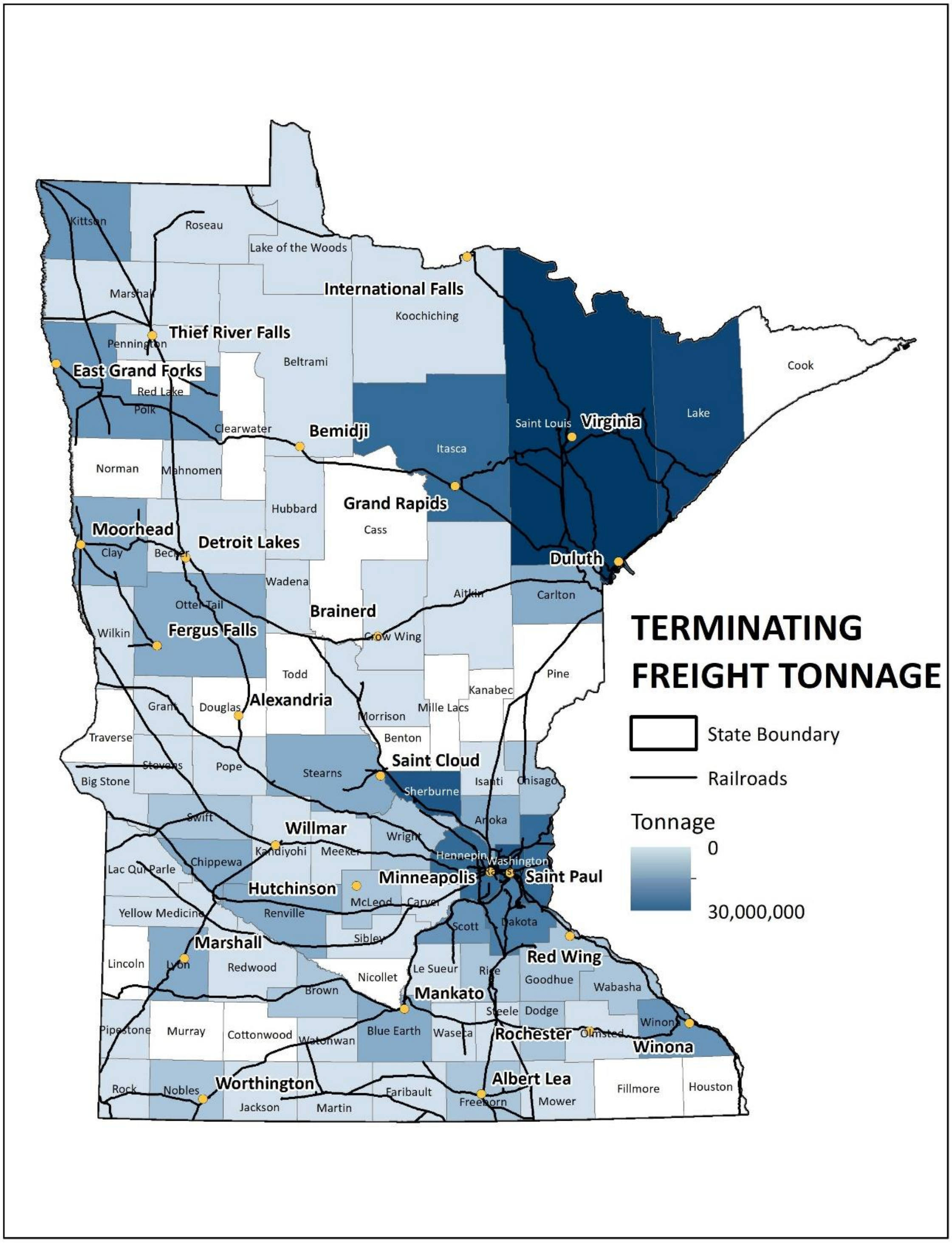
[15] Terminating include freight movements that are either intrastate or moving inbound to Minnesota to other states.

(Sherco). In 2023 and 2024 Sherco closed, so that the the rail flows reflected in the 2019 STB Waybill Sample no longer exist.

Ramsey County has the fourth highest rail terminating tonnage. Significant flows into this county include inbound moves of chemical products from Canada, Texas, and Utah; food products from North Canada, Dakota, Illinois, and California; intrastate moves of food products and hazardous materials; and inbound moves of hazardous materials from Texas and Illinois.

Itasca County is the fifth highest county for terminating tonnage, most of which consists of coal movements from Wyoming and Montana to the Boswell Energy Center. Minnesota Plower plans to retire the first of Boswell's generating units in 2030 and retire a second unit in 2035.

FIGURE 22. TERMINATING RAIL TRAFFIC BY MINNESOTA COUNTY, 2019 TONS

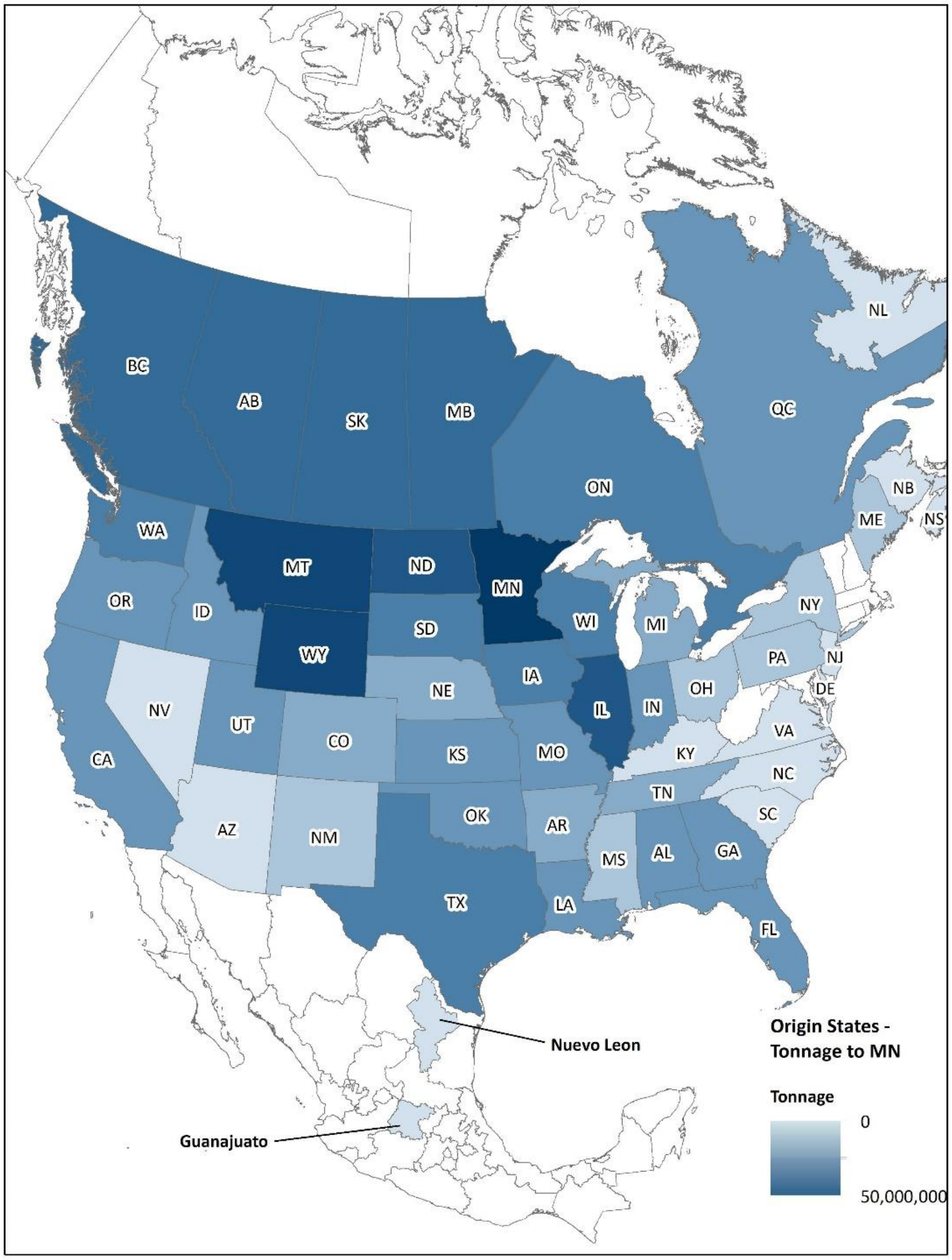


Source: STB 2019 Carload Waybill Sample

As of 2019, Wyoming and Montana were two of the largest trade partners to Minnesota by inbound tonnage, with rail being used for shipments of coal to the state's power plants. Most of these plants have either been closed or are planned for closure in the future. Canadian provinces are also large trading partners, with heartland provinces such as Manitoba and Saskatchewan sending food products, while paper products and lumber or wood products are shipped from western provinces such as Alberta and British Columbia.

Other significant trading partners include Illinois, North Dakota, Wisconsin, and Texas. While trade with North Dakota comprises mostly of farm products and food products, inbound moves from Illinois, Wisconsin and Texas are a diverse set of commodities. Major commodity moves include transportation equipment from Illinois, chemical products and hazardous materials from all three states, as well as nonmetallic minerals and clay/concrete/glass/stone from Wisconsin and Illinois.

FIGURE 23. ORIGIN OF RAIL TRAFFIC TERMINATING IN MINNESOTA BY STATE/PROVINCE, 2019 TONS



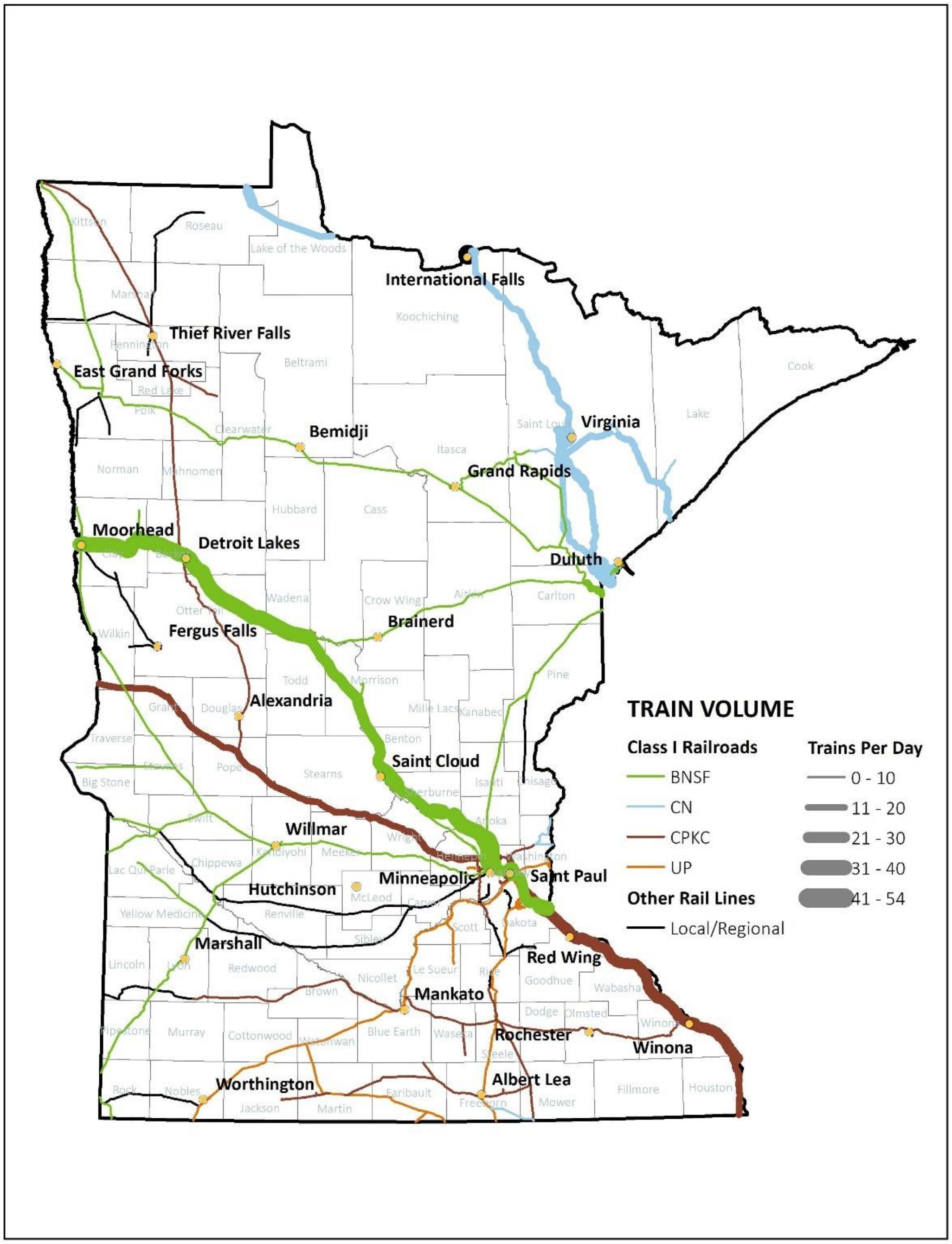
Source: STB 2019 Carload Waybill Sample

FREIGHT DENSITY OF MINNESOTA RAIL LINES

The three rail lines with the highest freight density in Minnesota are the transcontinental rail lines of BNSF, CPKC, and CN, which connect U.S. Midwest with the West Coast , shown in Figure 24. CN lines in northeastern

Minnesota, connecting iron mines with ports also have high freight density. Most of the remaining Minnesota rail lines have 10 or fewer trains per day.

FIGURE 24. TRAINS PER DAY OF RAIL LINES IN MINNESOTA, (DATA COLLECTED 2009 – 2022)

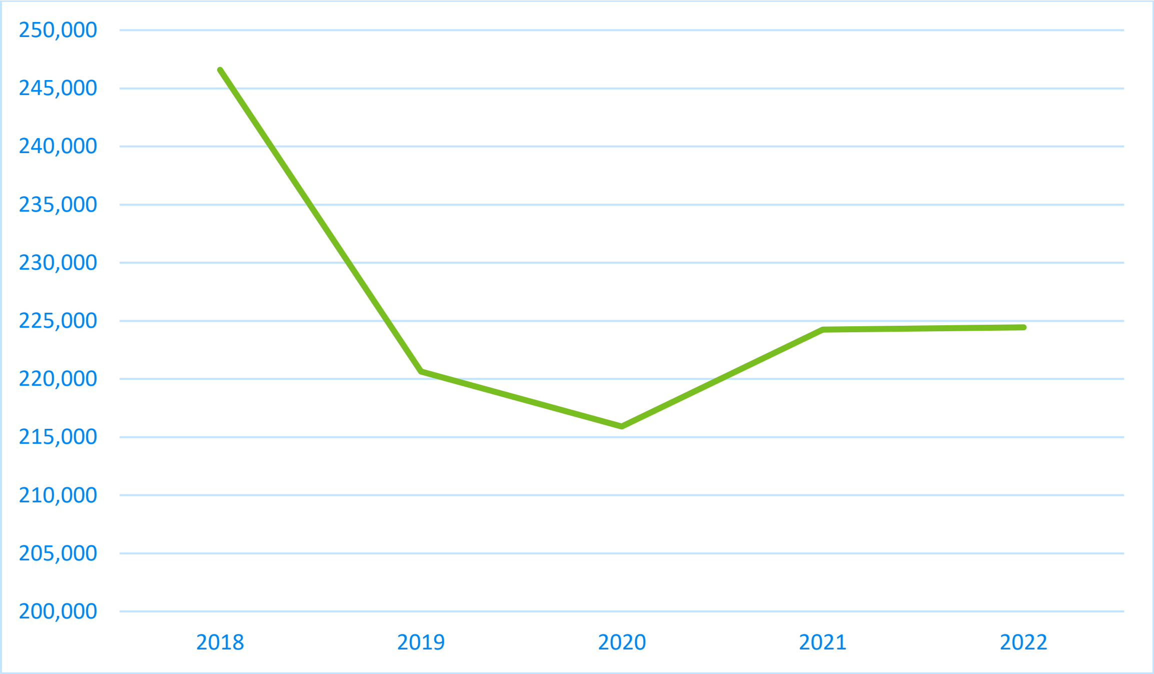


Source: MnDOT

TRENDS OF SHORT LINE RAILROAD CARLOADS HANDLED (2018 – 2022)

This Plan has included a survey of short line and regional railroads operating in Minnesota. Each railroad was asked to provide the number of carloads the railroads handled between 2018 and 2022. Of the railroads that responded to the survey, including all but one short line railroad, generally the trends in carloads handled were downward as shown in Figure 25.

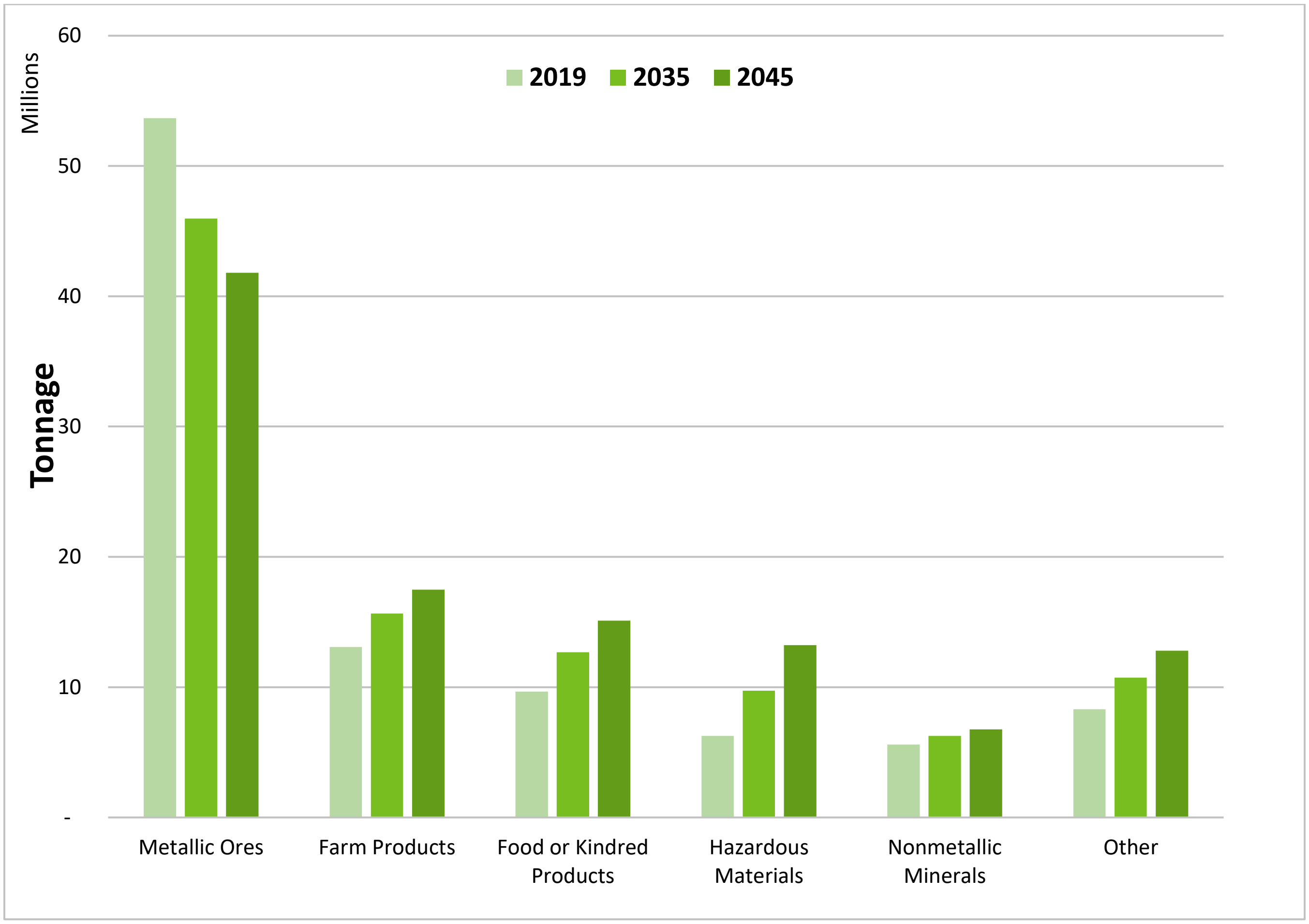
FIGURE 25. SHORTLINE AND REGIONAL RAILROAD NUMBER OF CARLOADS HANDLED IN MINNESOTA



FORECAST CHANGES IN MINNESOTA FREIGHT RAIL FLOWS

Forecast growth rates from the Federal Highway Administration Freight Analysis Framework-5 (FAF-5) have been applied to 2019 STB Waybill rail freight flow data. As shown in Figure 27, metallic ore shipments are expected to decline, while other originating commodities such as farm and food products, hazardous materials (ethanol and tar) are expected to grow.

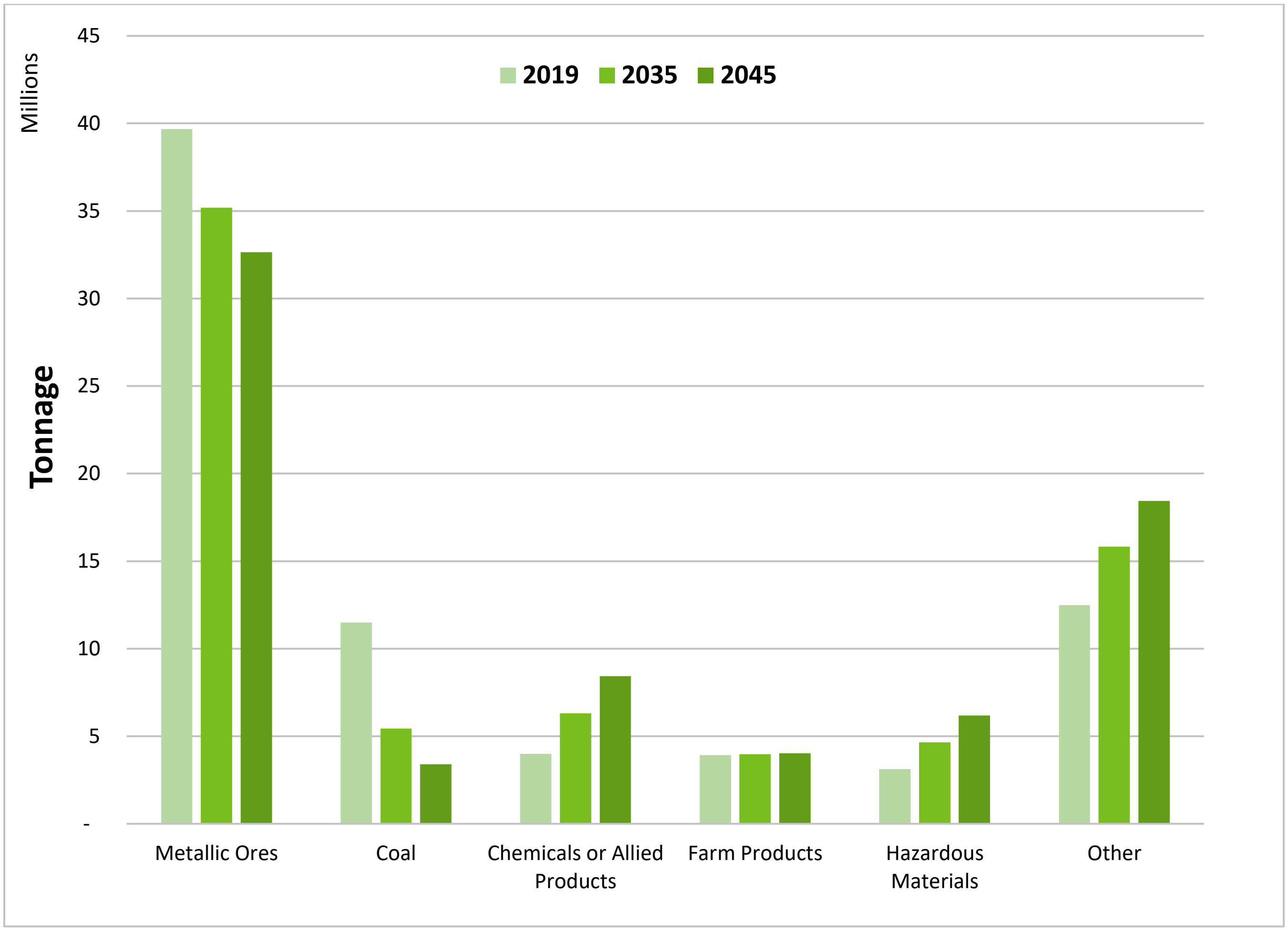
FIGURE 26. FORECAST TONNAGE OF RAIL FREIGHT ORIGINATING FROM MINNESOTA



Source: STB 2019 Carload Waybill Sample, FAF-5

As shown in Figure 27, tonnage of metallic ores (mostly intrastate movements of taconite) are expected to decline. Shipments of coal are expected to decline as well, as Minnesota's electric generations shifts away from coal-fired power. Other terminating tonnage, such as chemicals, hazardous materials (ethanol, petroleum, other commodities) are expected to grow.

FIGURE 27. FORECAST TONNAGE OF RAIL FREIGHT TERMINATING IN MINNESOTA



Source: STB 2019 Carload Waybill Sample

RAIL'S ROLE FOR THE MOVEMENT OF PEOPLE IN MINNESOTA

Rail's ridership is of lower magnitude compared with other modes of travel in Minnesota. As an example, data from the Rail Passengers Association suggests passengers traveling to or from Minnesota generated about 50 million passenger miles across all states traveled in 2022.[16] By contrast, vehicle miles traveled within Minnesota the same year was 57 billion according to data from the U.S. Federal Highway Administration (FHWA).[17] If average vehicle occupancy of 1.67 were assumed per USDOT assumptions, the associated passenger miles would be 95 billion.[18] Amtrak ridership in 2022 to/from Minnesota was 91,219. Minnesota's largest airport, Minneapolis-St. Paul International Airport, served 31.2 million passengers that year. However, while rail has a relatively small passenger market share, it provides an important transportation alternative, particularly for individuals that cannot drive, are unwilling to fly, or are not well served by other modal options.

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[16] Rail Passengers Association, Fact sheet: Amtrak in Minnesota, https://www.railpassengers.org/site/assets/files/1196/mn.pdf.

[17] FHWA, Highway Statistics, 2022, Table VM-2, https://www.fhwa.dot.gov/policyinformation/statistics/2022/vm2.cfm.

[18] U.S. Department of Transportation Benefit-Cost Analysis Guidance for Discretionary Grant Programs, December 2023, https://www.transportation.gov/sites/dot.gov/files/2023-12/Benefit%20Cost%20Analysis%20Guidance%202024%20Update.pdf.

ORGANIZATION, POLICY, AND FUNDING TO SUPPORT RAIL

MINNESOTA STATE ORGANIZATION FUNDING/FINANCING TO SUPPORT RAIL

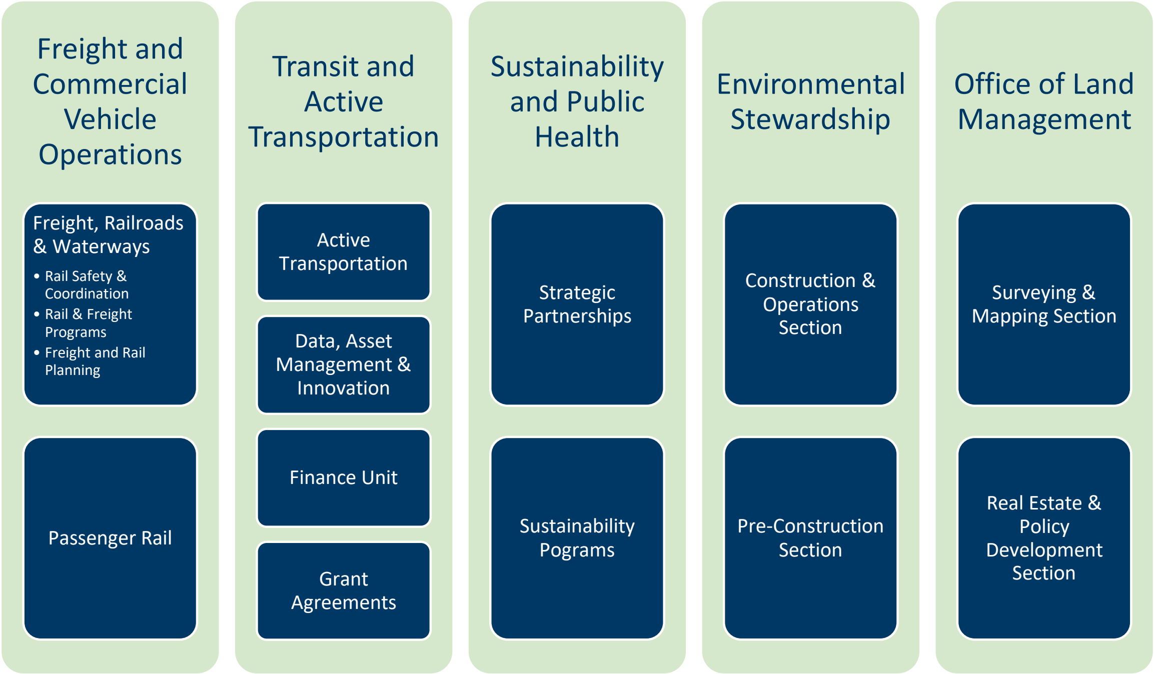
A range of public-sector resources at both the statewide and local levels in Minnesota provide support to passenger and freight rail.

MINNESOTA DEPARTMENT OF TRANSPORTATION

Minnesota Statutes assign MnDOT the role as the, "principal agency of the state for development, implementation, administration, consolidation, and coordination of state transportation policies, plans, and programs." The Minnesota Statutes require MnDOT to prepare a multimodal transportation plan every five years and to complete a statewide freight and passenger rail plan within two years of the multimodal transportation plan. MnDOT is in compliance with 49 U.S. Code Section 22102 and as such meets the eligibility requirements for FRA grant assistance programs.[19]

Several offices and functions within MnDOT support rail as shown in Figure 28.

FIGURE 28. MNDOT ORGANIZATIONS WITH A ROLE IN RAIL


Freight and Commercial Vehicle Operations
Freight, Railroads & Waterways
• Rail Safety & Coordination
• Rail & Freight Programs
• Freight and Rail Planning
Passenger Rail
Transit and Active Transportation
Active Transportation
Data, Asset Management & Innovation
Finance Unit
Grant Agreements
Sustainability and Public Health
Strategic Partnerships
Sustainability Pograms
Environmental Stewardship
Construction & Operations Section
Pre-Construction Section
Office of Land Management
Surveying & Mapping Section
Real Estate & Policy Development Section

The Office of Freight and Commercial Vehicle Operations (OFCVO). Located within the Modal Planning and Project Management Division, OFCVO has primary responsibility in handling freight and intercity passenger rail-related matters for the State, including policy development, multimodal planning, and investment processes. OFCVO includes the Rail Grade Crossing Improvement program, outreach to Operation Lifesaver, the Minnesota Rail

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[19] 49 U.S.C §22102.

Service Improvement (MRSI) program, the track inspection program, and management of state-owned rail bank assets. A passenger rail unit is being established within OFCVO and will support passenger initiatives such as the Twin Cities-Milwaukee-Chicago Intercity Passenger Rail Project (TCMC), and the Northern Lights Express (NLX) service.

The Office of Transit and Active Transportation (OTAT) currently provides reimbursement funding to the Metropolitan Council for MnDOTs portion of the costs to operate Northstar Commuter Rail Service. OTAT also supports intercity passenger and commuter rail in Minnesota through local transit and active transportation connections with rail stations.

The Office of Sustainability and Public Health addresses transportation emissions, greenhouse gas emissions, and other sustainability efforts. This office is relevant to rail initiatives for cleaner technologies and initiatives for cleaner technologies for movements to/from multimodal facilities.

The Office of Environmental Stewardship conducts environmental reviews and provides expertise for rail infrastructure project elements and can help rail projects with meeting environmental review requirements.

The Office of Land Management provides surveying, mapping, utility agreements, valuation, acquisition, and disposition of property. This office helps coordinate with railroad companies when construction activities impact railroad company right-of-way and require land acquisition or easements.

MINNESOTA DEPARTMENT OF TRANSPORTATION RAIL FUNDING/FINANCING PROGRAMS

Traditionally, Minnesota’s funding and financing of rail was relatively limited. However, in 2023, Minnesota passed major transportation legislation that included direct appropriations for key state-supported passenger rail projects as well as a short line tax credit and a future funding stream for passenger rail.

Minnesota Rail Service Improvement Program (MRSI)

The Minnesota Rail Service Improvement (MRSI) Program, established in 1976, helps prevent the loss of rail service on lines potentially subject to abandonment by railroads. Using state-developed eligibility rules, the state and rail users enter into contracts with railroads for rail line rehabilitation or contractors for other rail service improvements. For rehabilitation projects, when the project is completed, the railroad repays the State and rail users out of the operating revenues produced on the line. For capital improvement projects, the shipper repays the State over a period of 10 years. All reimbursements are returned to the Minnesota Rail Service Improvement Program account to fund future projects.

The MSRI program provides funding for projects in 6 categories:

1. **Freight Rail Economic Development Grant Program** established in 2017, the program provides grants for freight rail service improvements that support economic development.

2. **Rail Purchase Assistance** financially assists Regional Rail Authorities in acquiring rail lines that can be operated on a self-sustaining basis to provide local rail service. MnDOT can provide up to 50 percent of the value of the property. State funds only require repayment if the line is sold or ceases to serve a transportation function.

3. **Rail Rehabilitation Loans** provide low or no-interest loans to rehabilitate and preserve rail lines. Rail Line Rehabilitation projects are funded 70 percent by the State, 20 percent railroad, and 10 percent shippers

for privately owned rail lines. If the line is owned by a Regional Rail Authority, the funding participation is 80 percent State, 10 percent Rail Authority and 10 percent shippers. If the Line is rehabbed, the shipper and State funds are returned to those entities on an annual or quarterly basis over a period of 10 to 15 years.

4. **Capital Improvement Loans** provide rail users with loans to improve rail service and strengthen the financial condition of the associated line. Applications are accepted quarterly and repaid on a quarterly basis over 10 years.

5. **Rail User & Rail Carrier Loan Guarantees** guarantee up to 90 percent of a loan, to assist rail users and carrier in obtaining loans. Rail line rehabilitation, rolling stock acquisition and locomotive rehabilitation are eligible uses of the program.

6. **State Rail Bank** acquires and preserves abandoned rail lines for future transportation use or for transmitting energy, fuel or other commodities. Potential Rail Bank projects are driven by proposed abandonments, where intervention is required to retain the corridor for transportation purposes. Some properties are fully owned by MnDOT and others are partnerships to retain the rail corridor.

For the 2024 grant program, $9.6 million was available for this program Table 8 shows the number of projects, total funding, and average award between 2021 and 2023.

TABLE 8. 2021 – 2023 MRSI FUNDING

Year	# of Projects	Total Amount Awarded	Average
2021	7	$4.1 million	$579k
2022	8	$6.5 million	$812k
2023	9	$6.9 million	$772k

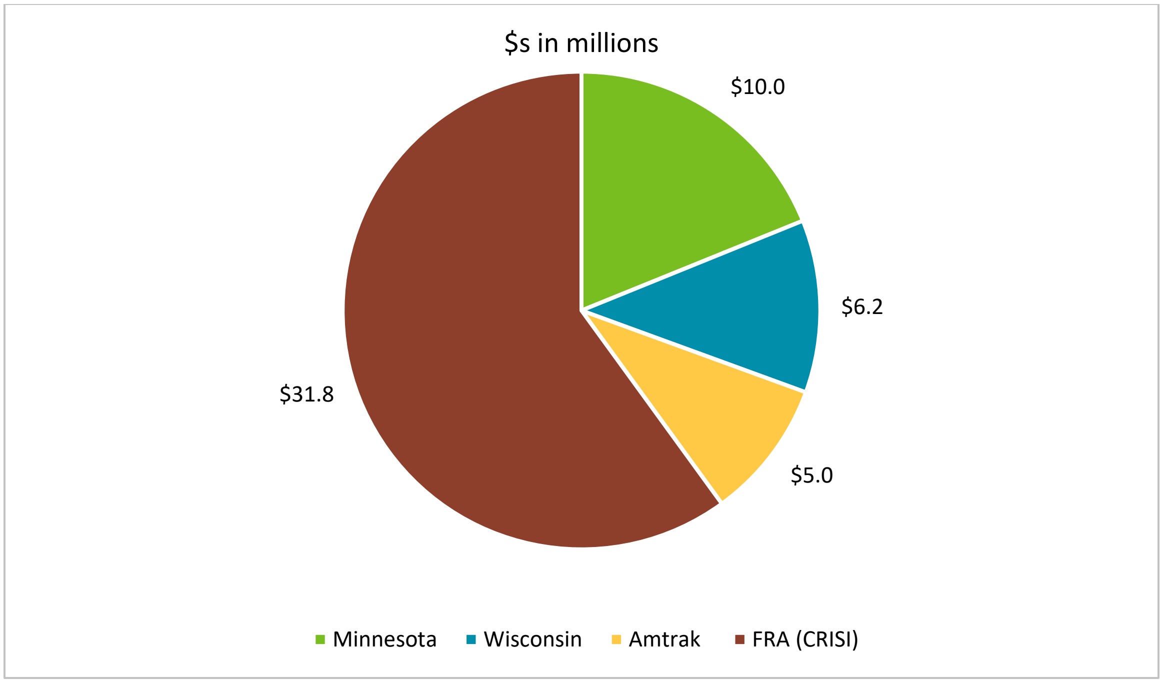
Of the 24 projects listed in Table 8, most were to improve access to the rail network, such as through sidings, spurs, or other measures. Several projects were for track or bridge rehabilitation.

Passenger Rail Funding

The Twin Cities-Milwaukee-Chicago (TCMC) Intercity Passenger Rail Project adds a second daily round-trip passenger train on the 411-mile corridor between Chicago, Illinois, and Twin Cities (St. Paul and Minneapolis) in Minnesota. The TCMC Service will follow Amtrak's existing long-distance Empire Builder route. The new service will complement the existing Empire Builder schedule, providing travel flexibility with both a morning and mid-day departure from Chicago and St. Paul. The capital improvement project is a funding partnership among Minnesota, Wisconsin, Amtrak, and the FRA as shown in Figure 16. Minnesota's funding was appropriated by the legislature from the State's general fund in 2023. The service was awarded a $12.6 million FRA Restoration and Enhancement Grant in 2020 to offset the cost of operations for the first three years. In 2023, the State's statutes were amended to direct 50 percent of the state property taxes on railroads be directed to intercity passenger rail service for net operating and capital maintenance expenses beginning July 1, 2027.[20]

In 2023 the legislature appropriated $194.7 million to establish a new Northern Light Express (NLX) service which will provide four, round-trip, daily passenger rail trips from Minneapolis to Duluth/Superior. The funding provided is for the 20% non-Federal match to support applications through Federal competitive grants for the $592.3 million capital construction project including final design work, track and signal upgrades to accommodate higher train speeds, new and longer sidings to improve traffic flow, grade crossing improvements to increase safety, new train stations and the expansion of existing stations. A portion of the funding may also be used to apply for a Federal grant to purchase equipment for the NLX service and for new equipment for the TCMC corridor. This is one-time appropriation from the State's general fund. Estimated annual operating costs are $18.9 million. Fare revenue is expected to generate $12 million and the remaining $6.9 million will be funded by the State.

FIGURE 29. TCMC CAPITAL FUNDING



OTHER STATE AGENCIES

The Minnesota Department of Employment and Economic Development (DEED) is the state's principal economic development agency. DEED provides financial and technical assistance to communities to build their manufacturing sector, leveraging the state's rail network for shipment.

The Minnesota Department of Agriculture (MDA) oversees the state's food supply, environmental health, and agricultural economy. The MDA's regulation of pesticides and fertilizers is relevant to the safety of railroad operations. For example, an application for an anhydrous ammonia storage permit from MDA requires applicants to provide details on excess flow valves and back check flow valves on rail tanks.[21] The MDA also has the authority to mediate disputes between railroad companies and private entities who wish to operate public elevators or buying or storing sites on railroad right-of-way.[22]

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[20] HF 2887 5th Engrossment - 93rd Legislature (2023 - 2024) (mn.gov)

The Minnesota Department of Revenue is in charge of tax collection for Minnesota. Class II and Class III railroads are eligible for a Short Line Railroad Infrastructure Modernization (SLIM) Credit. The credit is available for qualifying reconstruction or replacement expenses for maintenance, reconstruction, or replacement of railroad infrastructure, including track, roadbed, bridges, industrial leads and sidings, and track-related structures owned or leased in Minnesota. The non-refundable credit is equal to the lesser of either 50 percent of eligible expenses or $3,000 multiplied by the number of miles owned or leased in Minnesota and for which the railroad has qualifying expenditures. The Credit is available for qualifying expenses made between January 1, 2023, and December 31, 2030 If the credit exceeds tax liability in the year claimed, unused portions of the credit and can be carried forward and used to offset liability for up to five years.

REGIONAL/LOCAL AGENCIES

Regional Rail Authorities

In 1980, Minnesota passed the Regional Railroad Authorities Act, which authorizes a municipality or a region of municipalities that receive state or federal funding to preserve and improve local rail service for agriculture, industry, or passenger rail.[23] RRAs are permitted by statute to undertake a number of activities including railroad acquisition, bus rapid transit development, eminent domain, and taxation. RRAs are authorized under the statute to levy a property tax of up to 0.04835 percent on all taxable property situated in the municipalities named in the organizing resolution and to issue revenue bonds for rail capital projects and operations to be repaid by project revenues and other revenues including the property tax levy.

The Minnesota Regional Railroad Authorities Act was passed around the time that U.S. Congress had passed the Staggers Rail Act, which nationwide gave railroads the ability to end rail service on unprofitable rail lines. At the time, rail corridor preservation was a major concern, and the Regional Railroad Authorities Act was enacted to help address this concern. Localities with rail lines threatened with abandonment were given greater means to acquire these rail lines and preserve service. Some RRAs have acquired rail lines, such as the Minnesota Valley Regional Rail Authority (MVRRA) which has acquired the 94.7-mile line operated by Minnesota Prairie Line, Inc. (MPLI) in Southern and Southwestern Minnesota, or the St. Louis and Lake Counties Regional Railroad Authority (SLLCRRA) which operates the North Shore Scenic Railroad along 25.8 miles of track on the North Shore of Lake Superior from Duluth to Two Harbors, or the Buffalo Ridge Regional Railroad Authority which leases its 42 mile rail line to the Ellis & Eastern Railroad. More recently, RRAs have become involved with passenger rail, helping to fund studies or advocating for passenger rail. However, not all RRAs are active. Some were created to address specific issues such as threatened rail corridors, and those issues were long since resolved. Additional RRAs include:

Lac Qui Parle RRA
Countywide RRAs including
  - Anoka

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[21] https://www.mda.state.mn.us/sites/default/files/inline-files/NH3%20Permit%20Application%20-%20New%20and%20Change%20in%20Ownership%20-%20ag00130nh3.pdf

[22] Minnesota Statutes, section 230.09.

[23] Minnesota Statutes, chapter 398A.

  - Dakota
  - Hennepin
  - Olmsted
  - Pine
  - Ramsey
  - Scott
  - Stearns
  - Wabasha
  - Washington
  - Winona

Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs) are federally designated policy boards created and designed to provide transportation planning for urbanized areas with populations of over 50,000. Federal funding is channeled to communities in urbanized areas through MPOs via federally required metropolitan transportation plan (MTP), transportation improvement program (TIP), and unified planning work program (UPWP). Eight MPOs are located in Minnesota, detailed in Table 9 and displayed geographically in Figure 30.

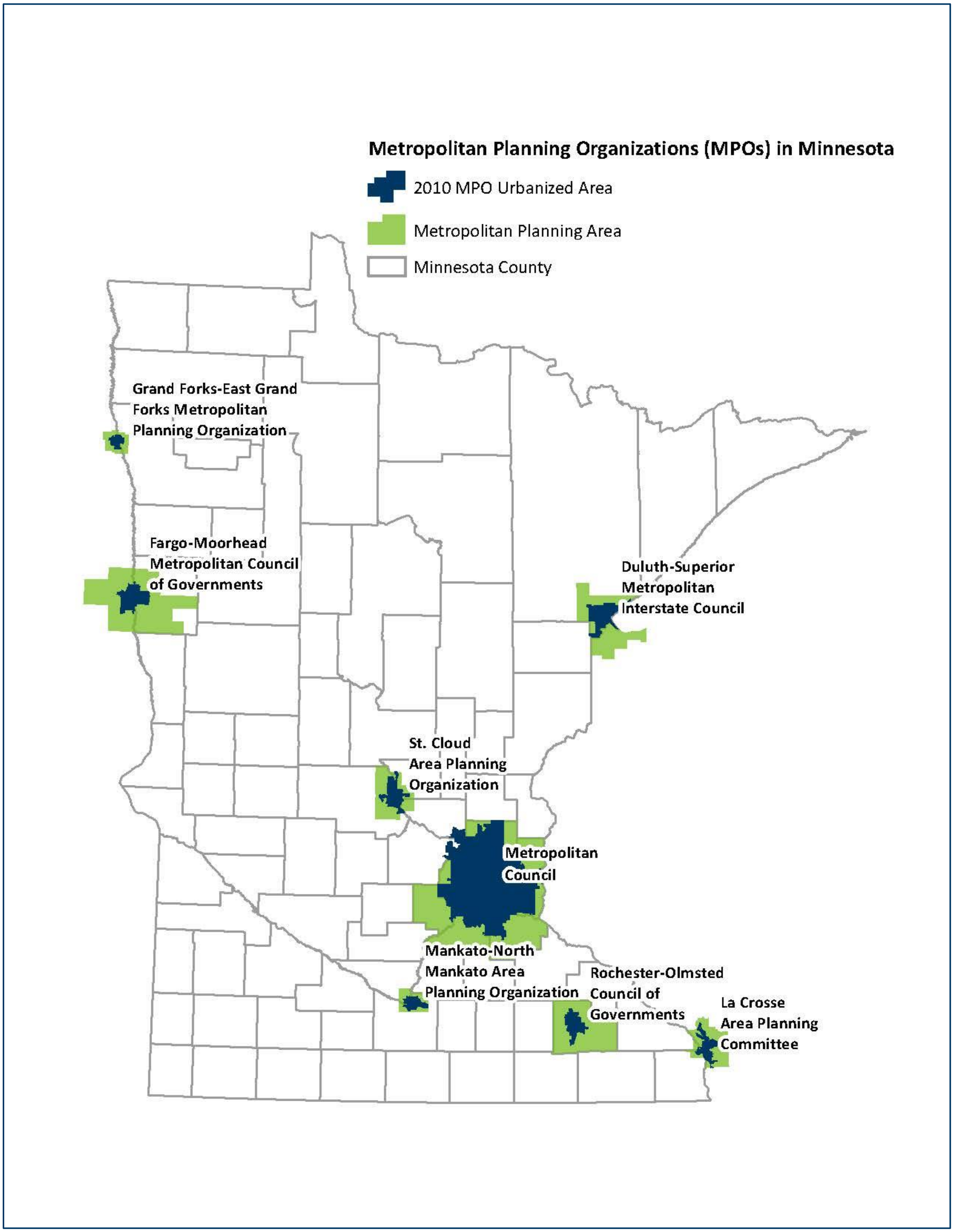
The largest MPO in the state is the Metropolitan Council (Met Council), which was established in 1967 to coordinate planning and development in the Twin Cities metropolitan area. The Met Council oversees Metro Transit, which operates the region's core bus system, the METRO light rail system consisting of the Blue and Green Lines, and the Northstar Commuter Rail. In 2023, the passage of a ¾-cent sales tax in the Twin Cities Metropolitan Area and a $72 million capital investment provided substantial investment to existing and planned service. Among the projects that will be supported by this are the planned extension of the Blue Line from its existing northern terminus at Target Field in downtown Minneapolis northwest to Brooklyn Park, and various bus rapid transit lines including the F, G, and H Line.

TABLE 9. MPOS IN MINNESOTA

Metropolitan Planning Organization	Acronym or Shorthand Name	Juristiction	Rail Plan or Other Rail Related	Freight Plan with Rail Section	LRTP with Rail Section
Metropolitan Interstate Council (Duluth-Superior)	DSMIC	Minnesota • St. Louis County Wisconsin • Douglas County			2019 Multimodal Section
Grand Forks-East Grand Forks Metropolitan Planning Organization	Forks MPO	Minnesota • St. Louis County North Dakota • Polk County	2010 Mill Spur Feasibility Study 2010 Railroad Quiet Zone Assessment 2020 Downtown Transportation Study	2014 Freight Rail Access Study	2019 Economic Vitality Section
Fargo-Moorhead Metropolitan Council of Governments	Metro COG	Minnesota • Clay County North Dakota			2019 System Performance Section

Metropolitan Planning Organization	Acronym or Shorthand Name	Juristiction	Rail Plan or Other Rail Related	Freight Plan with Rail Section	LRTP with Rail Section
		• Cass County			
St. Cloud Area Planning Organization	St. Cloud APO	Minnesota • Benton County • Sherburne County • Stearns County			2019 Goals, Objectives, Strategies, and Performance Measures Section
Twin Cities Metropolitan Council	Met Council	Minnesota • Anoka County • Carver County • Dakota County • Hennepin County • Ramsey County • Scott County • Washington County	2019 Transit Service Performance Evaluation 2021 Transit Service Allocation Study 2023 Northstar rail Post-Pandemic Study	2013 Freight Study 2024 Urban Freight Distribution Study (forthcoming)	2020 Transit Investment and Freight Investment Sections
Rochester-Olmsted Council of Governments	ROCOG	Minnesota • Olmsted County			2020 Major Steet & Highway System Section
La Crosse Area Planning Committee	LAPC	Minnesota • Houston County • Winona County Wisconsin • La Crosse County	2018 Climate Change Vulnerability Assessment		2020 Transportation System and Services Section
Mankato/North Mankato Area Planning Organization	MAPO	Minnesota • Blue Earth County • Nicollet County			2020 Freight and Future Transportation Network Sections

FIGURE 30. MPOS IN MINNESOTA


Metropolitan Planning Organizations (MPOs) in Minnesota
2010 MPO Urbanized Area
Metropolitan Planning Area
Minnesota County
Grand Forks-East Grand Forks Metropolitan Planning Organization
Fargo-Moorhead Metropolitan Council of Governments
Duluth-Superior Metropolitan Interstate Council
St. Cloud Area Planning Organization
Metropolitan Council
Mankato-North Mankato Area Planning Organization
Rochester-Olmsted Council of Governments
La Crosse Area Planning Committee

Regional Development Organizations

Regional Development Organizations (RDOs) are authorized by Minnesota statute to carry out planning efforts in Greater Minnesota.[24] Each RDO coordinates with MnDOT through a work program framework to ensure statewide consistency while recognizing each RDO has specific transportation planning circumstances and needs. There are 12 RDOs in Minnesota, displayed on Figure 31

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[24] Minnesota Statutes, sections 462.381 through 462.398.

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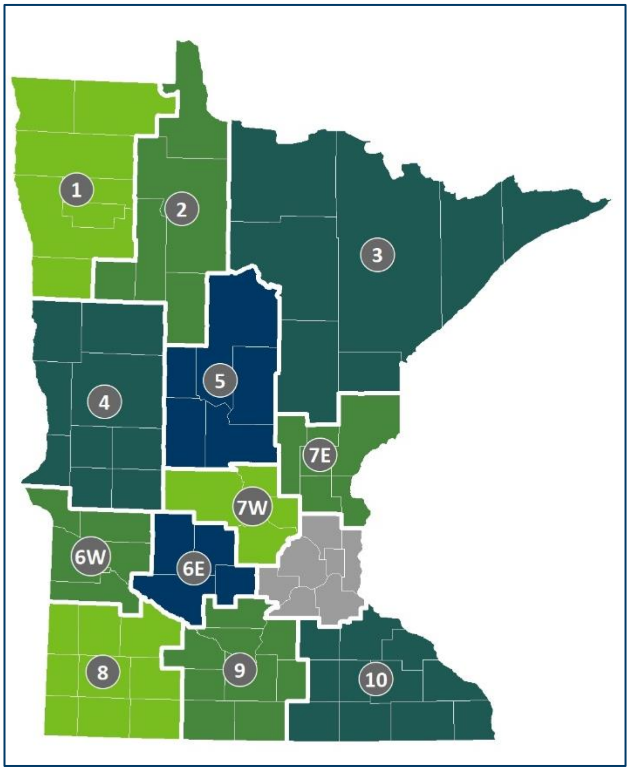
- Region 1: Northwest Regional Development Commission (RDC)
- Region 2: Headwaters RDC
- Region 3: Arrowhead RDC
- Region 4: West Central Initiative
- Region 5: Region 5 Development Commission
- Region 6E: Mid-Minnesota Development Commission
- Region 6W: Upper Valley Minnesota RDC
- Region 7E: East Central RDC
- Region 7W (works through MnDOT District 3)
- Region 8: Southwest RDC
- Region 9: Region 9 Development Commission
- Region 10 (works through MnDOT District 6)

FIGURE 31. RDOS IN MINNESOTA



Each RDO develops a Comprehensive Economic Development Strategy (CEDS), a five-year plan for regional economic growth. Depending on the nature of the RDO, rail is often an important part of the CEDS. For example, the Southwest RDC cites rail transloading and rail as a regional and statewide economic driver as opportunities to grow its freight- and trade-related industries such as agriculture and manufacturing.

Area Transportation Partnerships

MnDOT created Area Transportation Partnerships (ATPs) in part to ensure public involvement and regional planning efforts in Greater Minnesota inform MnDOT's four-year State Transportation Improvement Program (STIP). There are eight ATPs in Minnesota (Figure 32). ATPs provide an avenue by which regions can have direct input in which projects are programmed in the STIP. Such projects include those funded by MRSI and the Railway Highway Crossings Program, which are programmed in the STIP. ATPs often work closely with the RDOs discussed above. See Table 10 for partnerships between ATPs and RDOs.

FIGURE 32. ATPS IN MINNESOTA

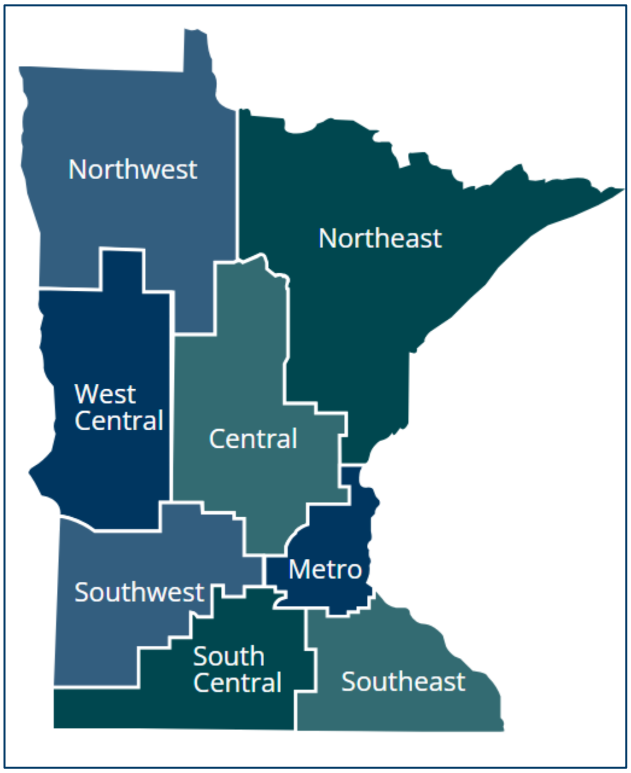


TABLE 10. ATP-RDO PARTNERSHIPS

ATP	RDO Partners
Northeast Minnesota ATP	Arrowhead RDC
Northwest Minnesota ATP	Northwest RDC
	Headwaters RDC
Central Minnesota ATP	Region 5 RDC
	East Central RDC
	Region 7W
West Central Minnesota ATP	Headwaters RDC
	West Central Initiative
	Upper Minnesota Valley RDC
Metropolitan Council Transportation Advisory Board	N/A (partners with the Metropolitan Council)
Southeast Minnesota ATP	N/A (partners with ROCOG and La Crosse APC)
South Central Minnesota ATP	Southwest RDC
	Region 9 RDC
Southwest Minnesota ATP	Upper Minnesota Valley RDC

ATP	RDO Partners
	Southwest RDC
	Mid-Minnesota Development Commission

MULTI STATE AGENCIES

The Midwest Regional Rail Initiative (MWRRI) was formed in 1996 by Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, Wisconsin, and Amtrak. The MWRRI's purpose was to develop a network of high-speed rail services focused on a central hub in Chicago. The following high-speed rail corridors were identified:

- Chicago to Detroit/Pontiac
- St. Louis to Kansas City
- Chicago to Cleveland
- Chicago to Quincy
- Chicago to Cincinnati
- Chicago to Omaha
- Chicago to Carbondale
- Chicago to Milwaukee to Twin Cities/Green Bay
- Chicago to St. Louis

In 2000, Minnesota authorized the Midwest Interstate Passenger Rail Compact to promote development and implementation of intercity passenger rail service in the Midwest, facilitate interaction among Midwestern state officials on matters related to passenger rail, coordinate long range passenger rail planning efforts, work with passenger rail stakeholders at all sectors and levels of government, and support transportation agency efforts in passenger rail service implementation.[25] Along with Minnesota, the states of Illinois, Indiana, Kansas, Michigan, Missouri, North Dakota, and Wisconsin have signed on to this compact. Iowa, Nebraska, Ohio, and South Dakota are also eligible to join but have not yet done so. The Midwest Interstate Passenger Rail Commission (MIPRC) was formed by this compact. In 2021, the MIPRC was a lead stakeholder in the FRA-published Midwest Regional Rail Plan, a conceptual 40-year vision for intercity passenger rail in the Midwest. This high-level vision is shown in Figure 33.

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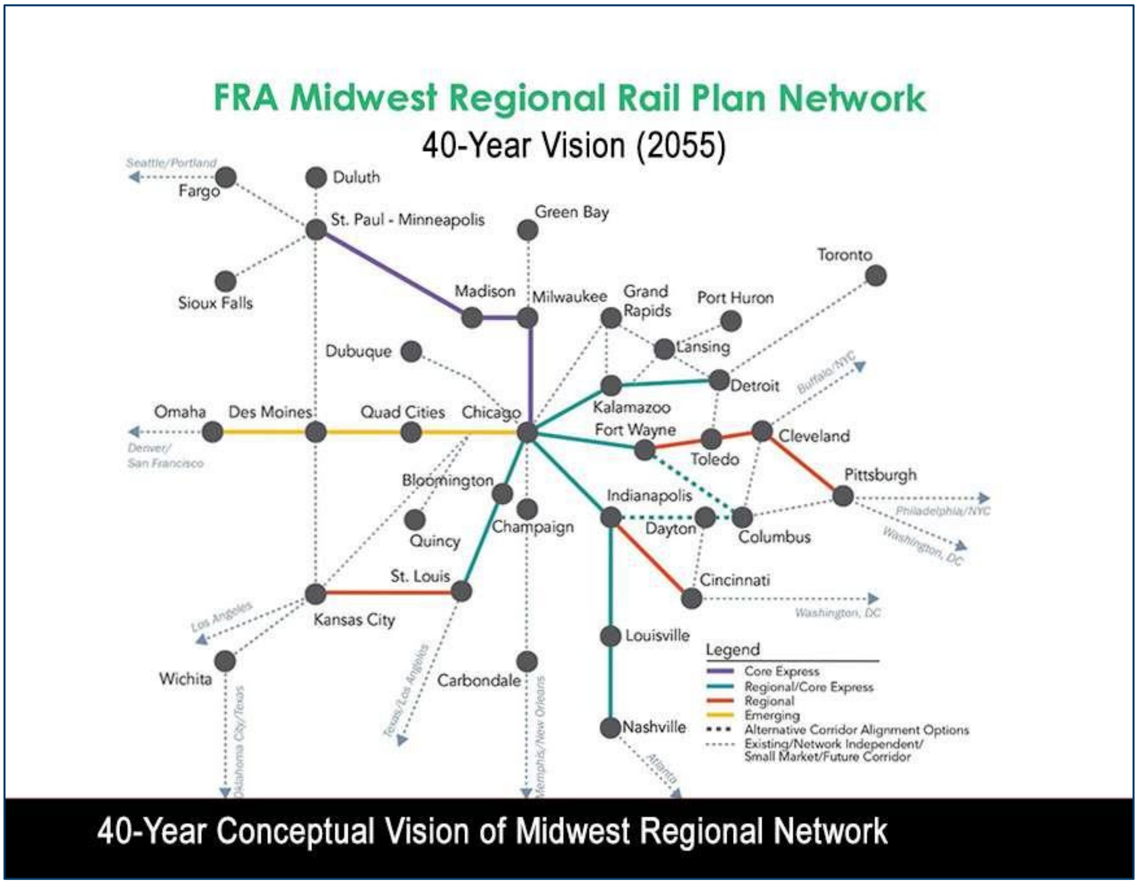
[25] Minnesota Statutes, section 218.75

FIGURE 33. MIPRC'S REGIONAL RAIL BUILDOUT FOR 2055



In addition to the passenger rail partnerships discussed above, Minnesota is also a member of the Mid-America Freight Coalition (MAFC). The MAFC is a ten-state organization comprised of Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin that was formed by Memorandum of Understanding upon the completion of the Upper Midwest Freight Corridor Study (UMFCS) in 2006. The member states of MAFC collaborate on freight planning, freight operations, and research across roadways, waterways, air, and rail.

PRIVATE FUNDING/FINANCING

Funding and financing for rail capital projects, equipment, and operations in the United States is a blend of private and public resources depending on the nature of operations and availability of rail specific programs. Private rail carriers annually budget funds for capital expenditures that are programmed based on internal priorities and performance measures. According to the American Association of Railroads, the average amount spent by Class 1 railroads on capital improvements and maintenance between 1980 and 2022 totaled $23 billion per year or $178,000 per mile per year.[26] Figure 34 illustrates the announced capital expenditures by Class 1 carriers for 2024.

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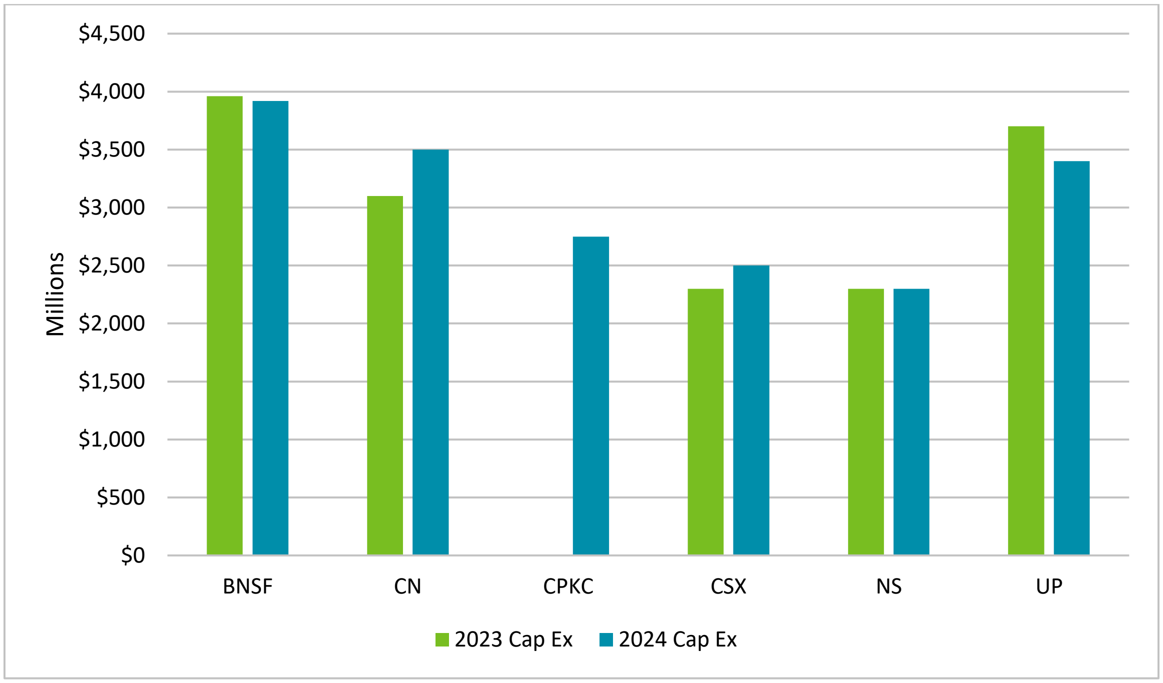
[26] AAR-Investments-Fact-Sheet.pdf accessed March 8, 2024

FIGURE 34. CLASS 1 CAPEX 2023 AND 2024 (MILLIONS)



Note CN and CPKC are in Canadian Dollars, and CPKC CapEx for 2023 is not known as the merger did not take place until April 2023

FEDERAL FUNDING/FINANCING

Federal funding for railroads is available through a number of programs including competitive grants and financial assistance tools predominantly offered through USDOT and the FRA. Other agencies offering funding opportunities include the FTA, US Environmental Protection Agency, and the Economic Development Administration.

The 2021 Infrastructure Investment and Jobs Act (IIJA) includes $66 billion in new funding for rail between federal fiscal year 2022 and 2026. Additional grant opportunities for rail can also be included in the annual Consolidated Appropriations legislation including Congressionally Directed Spending/Community Development Projects. Table 11 summarizes the relevant USDOT and other Federal discretionary grant programs.

TABLE 11. FEDERAL DISCRETIONARY GRANT PROGRAMS

Program	Annual Funding	Average Award	Eligible Projects	Eligible Applicants	Maximum Federal Share
FRA Grant Programs					
Consolidated Rail Infrastructure and Safety Improvement Program (CRISI)	$1B/year	FY 21: $8M FY 22: $20.5M	Mode: Rail Project Types: Research Planning Capital improvements Equipment Workforce development	Public agencies Amtrak Class II & III RRs Universities Labor organizations Equipment manufacturers Transportation Research Board	80%
Corridor ID Program	Up to 5% of the FSP program $500,000 for each Step 1 project	FY 22: $500k	Mode: Intercity Passenger Rail Project Types: Step 1 development procurement for assistance to prepare a Service Development Plan (SDP) Step 2: Preparation of an SDP Step 3: PE, NEPA and other project development activities	Public agencies Amtrak Interstate compacts Regional planning associations Regional passenger rail authorities Tribes	100% Step 1 90% Step 2 80% Step 3
Federal State Partnership for Intercity Passenger Rail (FSP)	$3.8B/year outside the Northeast Corridor FY 22 – FY 26	FY 22: $818.6M Note 4 of 10 projects were awarded more than $700M each	Mode: Intercity Passenger Rail Project Types: State of good repair Performance improvements New service Planning Environmental studies	Public agencies Amtrak Tribes	80%
Interstate Rail Compacts Grant Program	$3M/year	Not yet awarded	Mode: Intercity Passenger Rail Project Types:	Entities implementing Interstate Rail Compacts pursuant to section 410 of the Amtrak Reform and Accountability Reform Act of 1997 (49 U.S.C. 24101 note)	50%, preference to applications under 50%

Program	Annual Funding	Average Award	Eligible Projects	Eligible Applicants	Maximum Federal Share
Railroad Crossing Elimination (RCE)	$500M/year FY 22 – FY 26	FY 22: $9.1M	Mode: road/rail grade crossings Project Types: Grade separations or closures Track relocation Other safety improvements Includes construction, planning, environmental review, and design	Public Agencies including MPOs and Port Authorities Tribes	80%
Railroad Restoration and Enhancement (RREG)	$50M/year FY 22 – FY 26	No NOFOs issued to date – expected for FY 22 – FY 24 in May 2024	Mode: Intercity Passenger Rail Project Types: operating assistance grants to applicants for the purpose of initiating, restoring, or enhancing intercity rail passenger transportation	Public Agencies	90% yr. 1 80% yr 2 70% yr 3 60% yr 4 50% yr 5 30% yr 6
USDOT Multimodal Discretionary Grant Programs					
Infrastructure Project Assistance Program (MEGA)	$1B/year FY 22 – FY 26	FY 23 – FY 24 $186M Rail: $206.9M	Mode: All freight modes, intercity passenger rail, certain transit projects Project Types: Large complex capital projects that would otherwise be difficult to fund	Public agencies Tribes Amtrak	60% from Mega, 80% total Federal
Nationally significant multimodal freight and highway projects, or Infrastructure for Rebuilding America (INFRA)	$480M/year non-highway FY 22 – FY 26	FY 23 – FY 24 $104M Rail: $22.6M	Mode: All freight modes, 70% for highway projects including grade separation projects, 30% for non-highway Project Types (rail related): Freight intermodal or freight rail, freight projects on the National Multimodal Freight Network	Public agencies MPOs Federal land management agency Tribes Multistate corridor organizations	60% from INFRA, 81.42% total Federal (MN sliding scale)
Rebuilding America Infrastructure with Sustainability and Equity (RAISE)	$1.5B/year FY 22 – FY 26	FY 23: $9.3M	Mode: All surface transportation modes Project Types (rail related): Passenger and freight rail, intermodal projects	Public agencies Transit agencies Tribes	80% unless in a rural area, a historically disadvantaged community (HDC), or an area

Program	Annual Funding	Average Award	Eligible Projects	Eligible Applicants	Maximum Federal Share
					of persistent poverty (APP) up to 100% at Secretary's discretion for rural, HDC, or APP
Other Federal Discretionary Grants with Rail Eligibility					
Clean Ports (USEPA)	$3 billion	New program under the Inflation Reduction Act	Modes: marine, terminal, intermodal Rail Related Project Eligibility: 1. Zero Emissions Mobile Equipment - battery electric or hydrogen fuel cell locomotives and railcar movers and drayage trucks 2. Charging and fueling infrastructure for the equipment in #1 Note a Dry port is defined as an intermodal truck-rail facility included in the 2024 FHWA Intermodal Connector Database (having more than 50,000 TEUs per year or 100 trucks per day or more than 20% of freight volumes handled by any mode within a state)	Port authorities State, regional, local, or Tribal agencies that have jurisdiction over a port authority or port Air pollution control agencies Private entities that apply in a Statutory Partnership with an eligible entity that own, operate, or use facilities, cargo handling equipment, transportation equipment or related technology of a port	80% Water ports for projects between $150 - $500 million 90% water or dry ports for projects between $10 million and $149.9 million ($5 million for small water ports)
Port Infrastructure Development Program (MARAD)	$450M/year FY 22 – FY 26 Additional funds from Annual Appropriations may be available	FY 23: $15.9M (1 rail spur extension project for $11.25M)	A project located either within the boundary of a port, or outside the boundary of a port and directly related to port operations or to an intermodal connection to a port. Grants may be made for capital projects that will be used to improve the safety, efficiency, or reliability of among a larger list of projects: 1. Movement of goods into, out of, around, or within a port, such as for highway or rail	Port authorities Public agencies Tribes Private entities with a public entity sponsor	80% Secretary has discretion to raise Federal share for a 1. Project located in a rural area, Or a 2. Small project at a small port

Program	Annual Funding	Average Award	Eligible Projects	Eligible Applicants	Maximum Federal Share
			infrastructure, intermodal facilities, freight intelligent transportation systems, and digital infrastructure systems 2. Environmental and emissions mitigation measures, including (h) electric vehicle charging or hydrogen refueling infrastructure for drayage and medium or heavy-duty trucks and locomotives that service the port and related grid upgrades; rubber tired gantry cranes, and anti-idling technologies		
Reduction of Truck Emissions at Port Facilities (FHWA)	$80M/year FY 22 – FY 26	FY 22 – FY 23 not yet announced	Modes: port operations Rail eligible Projects: Reducing truck congestion within or adjacent to ports which can include promoting enhanced rail intermodal connections at ports and electrification of heavy-duty vehicles	Entities that: 1. have authority over, operate, or utilize port facilities and/or intermodal port transfer facilities 2. have authority over areas within or adjacent to ports and intermodal port transfer facilities, or 3. will test and/or evaluate technologies that reduce truck emissions at port facilities and/or intermodal port transfer facilities	80%

Other Federal Funding Programs

FHWA **Section 130 Funding**

MnDOT administers Minnesota's apportionment of the FHWA Section 130 grade crossing safety program, which was $6.5 million for federal fiscal year 2024. This program is apportioned to Minnesota and other states by a formula that considers the number of public highway/rail grade crossings in the state, as well as other factors.

The Infrastructure Investment and Jobs Act, administered through FTA, continues the discretionary Fixed Guideway Capital Investment Grants (CIG) program, which funds fixed guideway investments including new and expanded rapid rail, commuter rail, light rail, streetcars, bus rapid transit, and ferries, as well as corridor-based bus rapid transit investments that emulate the features of rail. There are three categories of eligible projects under the CIG program: New Starts, Small Starts, and Core Capacity.

Each type of CIG project has a unique set of requirements in the law, although many similarities exist among them. To be eligible to receive a CIG construction grant, all proposed projects must go through a multi-year, multi-step development process outlined in the law. FTA is required to evaluate and rate CIG projects on statutorily defined project justification and local financial commitment criteria that differ by project type, and a project must receive at least a “Medium” overall rating to advance through the steps in the process and receive a construction grant award.

Eligible projects include the following project category:

- *Joint intercity rail/public transportation project*: Design and construction elements attributable to the public transportation portion of the total project cost based on projected use of the new segment or expanded capacity of the project corridor, not including elements designed to achieve a state of good repair.

Grants require a 20% non-Federal match. New Starts projects require a 40% match, of which 20% can be from other Federal sources. The IIJA includes $1.6 billion per year in advanced appropriations for this program and $3 billion per year subject to annual appropriations FY2022 – FY2026

Awarded projects include $700 million for the Hudson Tunnel project for New Jersey commuter rail and Amtrak’s Northeast Corridor, and commuter rail projects in California and Florida.

Federal Transit Administration Urbanized Area Formula Grants Program (Section 5307)

The FTA’s Urbanized Area Formula (UAF) Grants Program[27] makes federal resources available to governors and other recipients for transit capital and operating assistance and transportation-related planning in urbanized areas. Eligible activities include rolling stock, overhaul and rebuilding of vehicles, station infrastructure, track, signals, communications, and computer hardware and software for fixed guideway systems including commuter rail. In FY 2023, the Twin Cities Metropolitan Area received $77.8 million in UAF funds, and another $14.5 million went to other MPOs in Minnesota.

Federal Transit Administration State of Good Repair Grants Program Section 5337)

The FTA’s State of Good Repair (SOGR) Grants Program[28] is a formula program that provides capital assistance for maintenance, replacement, and rehabilitation projects of high-intensity fixed guideway and motorbus systems in urbanized areas. Fixed guideway systems include commuter rail. Eligible projects include:

- rolling stock
- track
- line equipment and structures
- signals and communications

- power equipment and substations

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[27] 49 USC Section 5307

[28] 49 USC Section 5337

- passenger stations and terminals
- security equipment and systems
- maintenance facilities and equipment; and
- operational support equipment, including computer hardware and software.

Funds may also be used to develop and implement transit asset management plans.

In FY 2023, $19 million of Fixed Guideway Systems SOGR grants went to urbanized areas in Minnesota, all of it to the Minneapolis-St. Paul Metropolitan Area.

Rail Vehicle Replacement Set-Aside

The FTA also administers the Rail Vehicle Replacement (RVR) Grant program, a competitive program to fund capital projects to replace rail rolling stock, including locomotives. The RVR program is a set-aside of the SOGR Formula Grant Program. The maximum share the grant program can provide is 50 percent. Total Federal funds cannot exceed 80%. Since 2022, commuter rail services in Florida, Illinois and Ohio have received funds for replacement rolling stock.

Other Federal Funding Available for Commuter Rail, Intercity Passenger Rail, or Freight Rail

Congestion Mitigation and Air Quality Improvement (CMAQ). The Congestion Mitigation and Air Quality (CMAQ) program provides a flexible funding source to state and local governments for transportation projects and programs to meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality, particularly in areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas), and for former nonattainment areas that are now in compliance (so-called "maintenance" areas). The federal matching share for these funds is 80 percent. Currently, 10 Minnesota counties[29] are nonattainment or maintenance areas eligible to receive CMAQ funding for projects that reduce vehicular emissions, including rail projects. The IIJA apportioned $2.6 billion per year for the CMAQ program from FY2022 through FY2026. Minnesota received just under $71 million in CMAQ funding for FY 22 and FY 23. The Twin Cities Metropolitan Council (MPO) has implemented a new approach to awarding CMAQ and other Federal funding opportunities into a bi-annual Regional Solicitation.

Economic Development Administration Grants. The U.S. Economic Development Administration (EDA) grant and loan assistance programs support local organizations with economic development, focusing on economically distressed communities. Through the Public Works and Economic Adjustment Assistance (PWEAA) program EDA provides funding to help distressed communities build, design, or engineer critical infrastructure and facilities that will help implement regional development strategies and advance bottom-up economic development goals to promote regional prosperity. Additionally, the Local Technical Assistance program can support planning studies that consider rail investments as part of an economic development strategy. Projects must be consistent with the region's current Comprehensive Economic Development Strategy (CEDS) or equivalent EDA-accepted strategy. Over the last two years, four rail projects have been implemented through the PWEAA program in New York, Missouri, and Arkansas leveraging private investment and creating jobs.[30]

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[29] Minnesota Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants | Green Book | US EPA accessed March 9, 2024

[30] See EDA Grant History List | U.S. Economic Development Administration June and August 2022 and April and August 2023,

Federal Transportation Financing Programs

- The Transportation Infrastructure Finance and Innovation Act (TIFIA) program provides federal credit assistance in the form of direct loans, loan guarantees, and standby lines to finance large-scale, surface transportation projects, including transit. TIFIA credit assistance provides improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than can be found in private capital markets for similar instruments. TIFIA can help advance qualified large-scale projects that otherwise might be delayed or deferred because of size, complexity or uncertainty over the timing of revenues. MnDOT has submitted TIFIA applications for past projects such as the Hiawatha LRT line, in conjunction with the Met Council.
- The Railroad Rehabilitation & Improvement Financing (RRIF) Program authorizes the USDOT to provide direct loans and loan guarantees up to $35 billion to finance development of railroad infrastructure. At least $7 billion is reserved for non-Class I railroads. This funding can be used for intermodal or rail equipment or facility acquisition, development or establishment of new intermodal or railroad facilities, planning and design of intermodal or railroad projects, refinancing debt incurred for intermodal or railroad projects, and financing transit-oriented development (TOD).

MNDOT ACTIVITIES TO IMPROVE RAIL SAFETY

The main program that addresses risk factors at highway-rail grade crossings is the Rail-Highway Grade Crossing Safety Improvement Program, which is MnDOT's administration of the federal Railway Highway Crossing (Section 130) Program. Established in 1974, the program now devotes $6.6 million annually to eligible projects; including crossing closures, grade separations, crossing surfaces, and installation or improvements to warning devices (flashing light signals and gates).[31] Most of the funds are used to install new warning devices or replace antiquated crossing signal devices at the State's 4,200 public at-grade crossings. To date, active warning systems have been installed at more than 1,500 crossings.

At current pricing, this allocation allows the State to complete approximately 25 major equipment installations each year. Flashing signals and automatic gates are the typical systems deployed by the state at these crossings to promote driver awareness, as well as prevent high-risk behavior. MnDOT prioritizes projects using a risk ranking of nine to ten factors, including train speed, volume, skew of road, site distances. Generally, projects on crossings above a threshold of risk are eligible for funding. MnDOT works with local governments to identify projects at high risk crossings. To mitigate pedestrian incidents, MnDOT has also installed fencing along railroad rights-of-way, as well as pedestrian signs and gates at major crossings.

The State also administers the Grade Crossing Safety Account (GCSA) with state funding. The GCSA receives approximately $1 million a year in appropriations, and funds an additional 30-40 projects. Projects include line-of-sight improvements, vegetation removal, geometric improvements, upgrades to signage, crossing closure incentives, and other minor warning device enhancements or improvements.

MnDOT supports Operation Lifesaver, which is a nationwide non-profit working to deliver messages to the public on rail-road-driver interactions and best practices. This public education program is focused on avoiding and reducing fatalities and injuries at highway/rail grade crossings and along railroad rights-of-way. Through its programming, Operation Lifesaver's mission is to teach people how to make safe decisions around tracks and trains. Its instructors help drivers and pedestrians understand the signs, signals and conditions they might encounter at railway crossings. Operation Lifesaver also offers advice on the process of reporting highway-rail grade crossing equipment malfunctions.

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[31] Minnesota Rail Grade Crossing Action Plan (2022), pg. 14

In its recent Minnesota Rail Grade Crossing Action Plan, MnDOT proposed a series of actions to enhance its work to improve rail safety at highway-rail grade crossings, including:

- While historically, Section 130 funds have been oriented toward replacement and installation of warning devices, there is a need to also focus on opportunities for crossing elimination, such as crossing closures and grade separations. MnDOT will complete a set of actions to improve crossing elimination.
- Address a backlog of warning devices that are antiquated/obsolete and in need of replacement.
- As active transportation (pedestrian/bicycle) planning becomes more integrated into transportation planning, MnDOT will also include these modes in highway-rail grade crossing safety planning.
- Equity and environmental justice concerns will be incorporated into the highway-rail grade crossing program.
- The MnDOT analytical tools to prioritize highway-rail grade crossing improvements have served well but will be updated, given that many of the more obvious high-priority crossings have already been improved and other factors will need to be considered.
- MnDOT can help local jurisdictions with their rail safety initiatives and will implement a series of measures to improve the ability of MnDOT to communicate and be a resources for local communities.

HAZARDOUS MATERIALS AND SAFETY INSPECTION

MnDOT also participates in the federal government’s State Rail Safety Participation Program. This program, supported by the Federal Railroad Administration, provides for the training and certification of inspectors responsible for ensuring tracks, crossings, yards, equipment, and their associated safety, maintenance, and repair records are up to standard. The three overarching responsibilities of the program are track safety, safety in the transport of hazardous materials, and safety of motive power and equipment.

MnDOT’s 2014 “Report on the Improvements to Highway-Rail Grade Crossings and Rail Safety” emphasized the importance of improving emergency services, in order to ensure rail safety. Chapter 312, Articles 9 and 10 of the 2014 Laws of Minnesota also mandated that this study identify the key rail corridors that are used to transport Bakken oil from North Dakota through Minnesota. This study highlighted policies that could be implemented to reduce public risks of derailments, spills, and fires. Recent legislation, such as the 2023 transportation budget bill (HF 2887) has aimed to address the findings of this report, by mandating the provision and funding of training for local law enforcement and fire departments by the rail companies.

RAIL’S IMPACTS ON MINNESOTA

RAIL’S ECONOMIC IMPACT IN MINNESOTA

Minnesota’s rail industry provides the state with valuable economic opportunities through its provision of a reliable and efficient means to move people and goods, and by providing employment and earnings to residents working in the industry. This economic analysis uses the following measures to quantify the economic impacts of rail:

- **Employment** represents the number of full and part-time jobs.
- **Earnings** include wage and salary disbursements to employees, supplements to wages and salaries, and owners' income.
- **Business Output** includes the quantity of goods and services provided as a result of employment.

According to the Association for American Railroads (AAR) profile for Minnesota, freight rail operators employed 4,281 people in Minnesota in 2022, with average annual wages/benefits per employee of $132,590.[32] Furthermore, 12,600 railroad retirement beneficiaries live in Minnesota with total railroad retirement benefits paid valued at $331 million.

Passenger rail provides economic impacts and benefits to Minnesota as well, albeit on a smaller scale as a result of the lower number of passenger trains serving Minnesota. Amtrak employed 33 Minnesota residents with the total wages Minnesota's residents amounting to $3,314,746, equivalent to $100,447 per employee.[33] In fiscal year 2022, over $21.6 million worth of goods and services were purchased towards the passenger rail industry in Minnesota.

In addition to the direct impact of the rail transportation industry, there is a ripple effect through the economy due its spending on supplier industries, also known as indirect effects. Similarly, the consequent spending of employee and suppliers' earnings of the rail industries on household goods and services, also known as induced effects, stimulates the flow of money through the economy. The direct employment of 4,314 people in the rail industry, for both freight and passenger rail, supports an additional employment of 9,383 jobs in the state of Minnesota through indirect and induced effects. The provision of wages to employees of the rail industry in the amount of over $571 million results in additional earnings of $457 million in other industries through indirect and induced impacts, also known as the multiplier effect, with total earnings valuing over $1 billion. Total direct, indirect, and induced effects associated with the rail transportation industry are summarized in Table 12. Indirect and induced effects are calculated using the BEA's Regional Input-Output Modeling System (RIMS II) multipliers.

TABLE 12: ECONOMIC IMPACT ANALYSIS OF MINNESOTA RAIL INDUSTRY, 2022

Economic Indicator	Direct	Indirect	Induced	Total
Freight Rail				
Employment	4,281	4,205	5,107	13,593
Earnings ($M)	$567.6	$192.9	$262.4	$1,023.0
Business Output ($M)	$2,159.1	$1,002.9	$386.7	$3,548.8
Passenger Rail (Amtrak)				

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[32] Association of American Railroads, State Freight Rail Data, 2022: AAR-Minnesota-State-Fact-Sheet.pdf

[33] Amtrak Fact Sheet, Fiscal Year 2022, State of Minnesota.

Economic Indicator	Direct	Indirect	Induced	Total
Employment	33	32	39	105
Earnings ($M)	$3.3	$1.1	$0.5	$5.0
Business Output ($M)	$16.6	$7.7	$3.0	$27.4
Total Rail impacts				
Employment	4,314	4,237	5,146	13,697
Earnings ($M)	$570.9	$194.1	$262.9	$1,027.9
Business Output ($M)	$2,175.8	$1,010.6	$389.7	$3,576.1

Source: WSP Analysis of the Economic Impact of Rail Employment using BEA's RIMS II.

In 2022, the rail transportation industry generated $1.5 billion in GDP within Minnesota.[34] Rail's economic importance to Minnesota is not just due to the employment and spending of railroads and railroad employees within the state, but also because many Minnesota industries, including agriculture, mining, manufacturing, wholesale trade, and retail trade, depend on rail to serve their customers.

BENEFITS ANALYSIS

Rail travel has many economic benefits compared to roadway travel, particularly as it pertains to externalities. The provision of rail as an alternative mode of transportation benefits Minnesota with the associated fuel savings, reduced greenhouse gases and air pollutants, highway safety risks, highway congestion, and pavement damage associated with diverted roadway trips. These benefits are expressed as monetized values for passenger and freight rail below.

PASSENGER RAIL BENEFITS

Intercity passenger rail helps connect Minnesotans to communities across the country. In particular, Amtrak's Empire Builder line makes four stops within Minnesota and dozens more between Chicago, Illinois and Seattle, Washington / Portland, Oregon, serving as an economical and relatively green mode of transport compared to flying or driving. For example, shifting one roadway trip between the Twin Cities and Chicago to rail eliminates nearly 400 miles of roadway travel. This reduction in automobile traffic results in lower emissions, vehicle operating costs, congestion, and roadway crashes. In total, these benefits amount to nearly $300 in benefits per diverted trip. Table 13 summarizes these benefits by category. Of these benefits $89.49 are societal benefits, such as safety, emissions, crash reduction, while the remaining benefits accrue to passengers.

TABLE 13: PASSENGER RAIL BENEFITS PER TRIP, 2022 DOLLARS

Benefit Category	Net Benefit
Vehicle Operating Cost Reduction[35]	$206.96
Emissions Reduction[36]	$33.77
Congestion Reduction[35]	$33.23

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[34] Bureau of Economic Analysis, 2022.

[35] Vehicle Operating Cost, Congestion Reduction, and Safety benefits are monetized using per mile values for light-duty vehicles from USDOT's Benefit Cost Analysis Guidance for Discretionary Grant Programs, Tables A-4 and A-14, December 2023.

[36] Emissions benefits are quantified for a 398-mile trip using the EPA's MOVES national emissions factors for passenger vehicles, assuming 50% of miles traveled are on urban highways at a speed of 55 mph and 50% are on rural highways at a speed of 60 mph, and monetized using per ton values from USDOT's Benefit Cost Analysis Guidance for Discretionary Grant Programs, Table A-6.

Benefit Category	Net Benefit
Crash Reduction[35]	$22.49
Total Benefit	**$296.45**

If passenger rail were not available, and all 91,219 Amtrak passengers starting or ending their trip in Minnesota in 2022[37] were instead forced to travel by automobile, this would have resulted in approximately $27.1 million in additional costs.

FREIGHT RAIL BENEFITS

Like passenger rail, freight rail removes vehicles and their associated externalities from the roadway. As larger and heavier vehicles, the removal of trucks has an even greater impact. Comparing the transport of a single container between the BNSF's Railyards in St. Paul and Chicago (approximately 419 miles by rail and 400 miles by truck), the rail trip has a net external benefit of approximately $300 in 2022 dollars, as detailed in Table 14.[38]

TABLE 14: FREIGHT RAIL BENEFITS PER AVOIDED TRUCK TRIP, 2022 DOLLARS

Benefit Category	Truck Cost	Rail Cost	Net Benefit
CO2 Emissions[39]	$108.32	$17.46	$90.86
Pavement Damage[40]	$42.40	N/A	$42.40
Congestion[41]	$84.00	N/A	$84.00
Safety[42]	$129.51	$45.59	$83.93
Total Benefit	**$364.23**	**$63.04**	**$301.19**

Another way of looking at these benefits is to consider a project that diverts 1,000 carloads of freight from trucks to rail. Carrying 1,000 carloads requires approximately 4,000 trucks (assuming 4 trucks per carload) [43] or 13.3 trains (assuming 75 carloads per train).[44] The average distance shipped to/from Minnesota by rail is 649 miles according to the Surface Transportation Board's 2019 waybill sample, and these trips are assumed to travel at an average speed of 20 miles per hour. Based on these values, and many of the same assumptions used to generate

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[37] Fact Sheet: Amtrak in Minnesota, https://www.railpassengers.org/site/assets/files/1196/mn.pdf

[38] This analysis assumes 200 containers per train and 1 container per truck; train costs are therefore divided by 200 to compare to a single truck.

[39] Truck CO2 emissions are quantified for a 400-mile trip using the EPA's MOVES national emissions factors for trucks, assuming 50% of miles traveled are on urban highways at a speed of 55 mph and 50% are on rural highways at a speed of 60 mph. These emissions are monetized using per ton values from USDOT's Benefit Cost Analysis Guidance for Discretionary Grant Programs, Table A-6. Rail CO2 emissions are monetized using per hour values for hauling freight trains from USDOT's BCA Guidance, Table A-5. The number of hours per trip is calculated to be 12.5, based on the BNSF's average intermodal rail speed of 33.6 mph (from EP724 Consolidated Data) and a distance between BNSF's Chicago and St. Paul yards of 419 rail miles.

[40] Monetized using values from the Addendum to the 1997 Highway Cost Allocation Study, May 2000, https://www.fhwa.dot.gov/policy/otps/ costallocation.cfm, updated to 2022 dollars using GDP deflator, reflecting average of 40 and 60 kip 4-axle single unit trucks.

[41] Monetized using per mile values for trucks from USDOT's BCA Guidance, Table A-14.

[42] Truck safety costs assume 1.8 fatalities and 47.3 injuries per 100 million truck miles, based on FMCSA, *Large Truck and Bus Crash Facts 2021*, *https://www.fmcsa.dot.gov/safety/data-and-statistics/large-truck-and-bus-crash-facts-2021#A5*. Rail safety costs assume 1.5 fatalities and 11.1 injuries per million rail miles, calculated using national FRA safety data, https://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/TenYearAccidentIncidentOverview.aspx. Monetization of these casualties is based on factors from USDOT's BCA Guidance, Table A-1.

[43] Based on roughly 80 tons per railcar from data compiled by the Association of American Railroads and 20 tons per truck from the Federal Highway Administration's Vehicle Inventory and Use Survey (VIUS)

[44] AAR Ten Year Trends

Table 14, the net benefits of such a project over 20 years is approximately $29.6 million in discounted 2022 dollars.[45] These benefits are summarized in Table 15 below.

TABLE 15: FREIGHT RAIL BENEFITS PER 1,000 CARLOADS, MILLIONS OF DISCOUNTED 2022 DOLLARS

Benefit Category	Truck Cost	Rail Cost	Net Benefit
CO2 Emissions[46]	$12.45	$2.28[47]	$10.18
Pavement Damage[40]	$4.33	N/A	$3.70
Congestion[41]	$8.58	N/A	$7.33
Safety[42]	$13.23	$2.96	$8.34
Total Benefit	**$38.59**	**$5.06**	**$29.56**

ENVIRONMENTAL JUSTICE IMPACTS OF RAIL

An environmental justice impact assessment of rail in Minnesota has been performed and has been provided as Appendix A to this Technical Memorandum. The assessment provides an analysis of the statewide rail system's benefits and burdens on environmental justice populations, which include: Black, Indigenous, and People of Color (BIPOC), people who are low-income, people who have limited English proficiency, people who are age 65 or older and age 16 or younger, and households without a vehicle. This analysis uses both qualitative and quantitative data analysis to review existing conditions and provide recommendations to avoid, minimize, or mitigate burdens through the project planning and decision-making process.

The data analysis included in the assessment finds that some differences exist for benefits and burdens associated with the Minnesota rail network for disadvantaged areas including:

- People in disadvantaged areas along rail lines are more likely than people in non-disadvantaged areas to live near a crash.
- Disadvantaged census tracts near rail yards are more likely to have high diesel PM pollution than non-disadvantaged census tracts near rail yards.
- However, people who live in disadvantaged areas along rail lines are more likely to live in close proximity to a passenger rail station than people who live in non-disadvantaged areas along rail lines.

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[45] In line with USDOT BCA guidance, benefits are discounted using a 3.1% annual discount rate, except for CO2 emissions, which use a 2.0% discount rate.

[46] Truck CO2 emissions are quantified based on 4,000 trucks making a 649-mile trip, while rail CO2 emissions are calculated based on 13.3 trains making a 32.5-hour trip (based on typical short line speeds of 20 mph and a distance of 649 rail miles). Emissions and monetization factors are based on EPA MOVES factors and USDOT BCA Guidance as described in footnote 39.

[47] Rail CO2 emissions are calculated based on 13.3 trains making a 32.5-hour trip (based on typical short line speeds of 20 mph and a distance of 649 rail miles). Rail CO2 emission costs also account for switcher locomotive movements in railyards. Rail switcher emissions costs assume a fuel consumption rate of 9.5 gallons per hour, based on Argonne National Laboratory, *Total Cost of Ownership for Line Haul, Yard Switchers and Regional Passenger Locomotives*, https://www.energy.gov/sites/prod/files/2019/04 /f62/fcto-h2-at-rail-workshop-2019-ahluwalia.pdf and a rate of greenhouse gas emissions per gallon of fuel of 0.01018, based on the EPA's Greenhouse Gases Equivalencies Calculator. Switcher time per train is assumed to be 30 hours, based on WSP's *Analysis of STB Uniform Rail Costing System*.

TRENDS THAT WILL IMPACT RAIL IN MINNESOTA

SOCIO ECONOMIC TRENDS

The U.S. Census Bureau estimates that Minnesota's population to be 5.7 million people, as of 2023. The state's population has grown an average of 0.70 percent per year over the past decade, according to the American Community Survey, approximately in line with national population growth. Between 2013 and 2024, the median age of a Minnesota state resident climbed from 37.1 to 38.5[48] – signifying an aging population. Minnesota's median age, which has historically been lower than the national median, now matches the national figure. This rise is expected to impact the size of the state's labor force, as the working age share of the population declines.[49] The trend could impact demand for passenger rail as more elderly no longer drive and rely on alternate means of transportation.

Minnesota's five largest population centers are the cities of Minneapolis, Saint Paul, Rochester, Bloomington, and Duluth. Minneapolis with more than 426,000 residents in 2022 is the state's largest city. The Minneapolis–St. Paul–Bloomington, MN-WI Metropolitan Statistical Area (MSA) is comprised of an area that spans 15 counties and is home to 3.7 million people.[50] The metropolitan area ranks as the 16th largest in the United States in terms of population size. Other major metropolitan areas in Minnesota are the Duluth, MN-WI MSA, the Fargo, ND-MN MSA, and the Rochester, MN MSA which are each home to more than 200,000 people.

INDUSTRY TRENDS

The U.S. Bureau of Economic Analysis estimates that the Minnesota economy generated $475 billion in goods and services in 2023. This places the state as the highest output among the five states that it immediately borders: Iowa, North Dakota, South Dakota and Wisconsin. Ninety-one percent of this output is generated by the private sector, led by the real estate industry, manufacturing, and health care services.

Table 16 displays industry location quotient, which reflects each industry's percentage of the Minnesota economy compared to that industry's percentage of the U.S. economy. A location quotient of 1 suggests that the concentration of an industry in in Minnesota mimics that of the industry in the U.S. If the location quotient is higher than 1, the industry has a higher percentage of the economy in Minnesota than in the U.S. as a whole, and a location quotient less than one suggests the industry is smaller in Minnesota than the U.S. generally. Minnesota's economic composition does not differ widely from the national economy, as all industries' share of the Minnesota economy fall within 2 percent of that industry's share in the national economy. Manufacturing, wholesale trade, and accomodation/food services are the three industries which are higher in Minnesota than in the national economy. By contrast, real estate, administrative services, and management of companies are a smaller share of the Minnesota economy than they are of the national figure.

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[48] United States Census, American Community Survey (5-Year Estimates)

[49] Minnesota State Freight Plan - Working Paper 2: Current and Future Freight Trends

[50] United States Census, American Community Survey (5-Year Estimates)

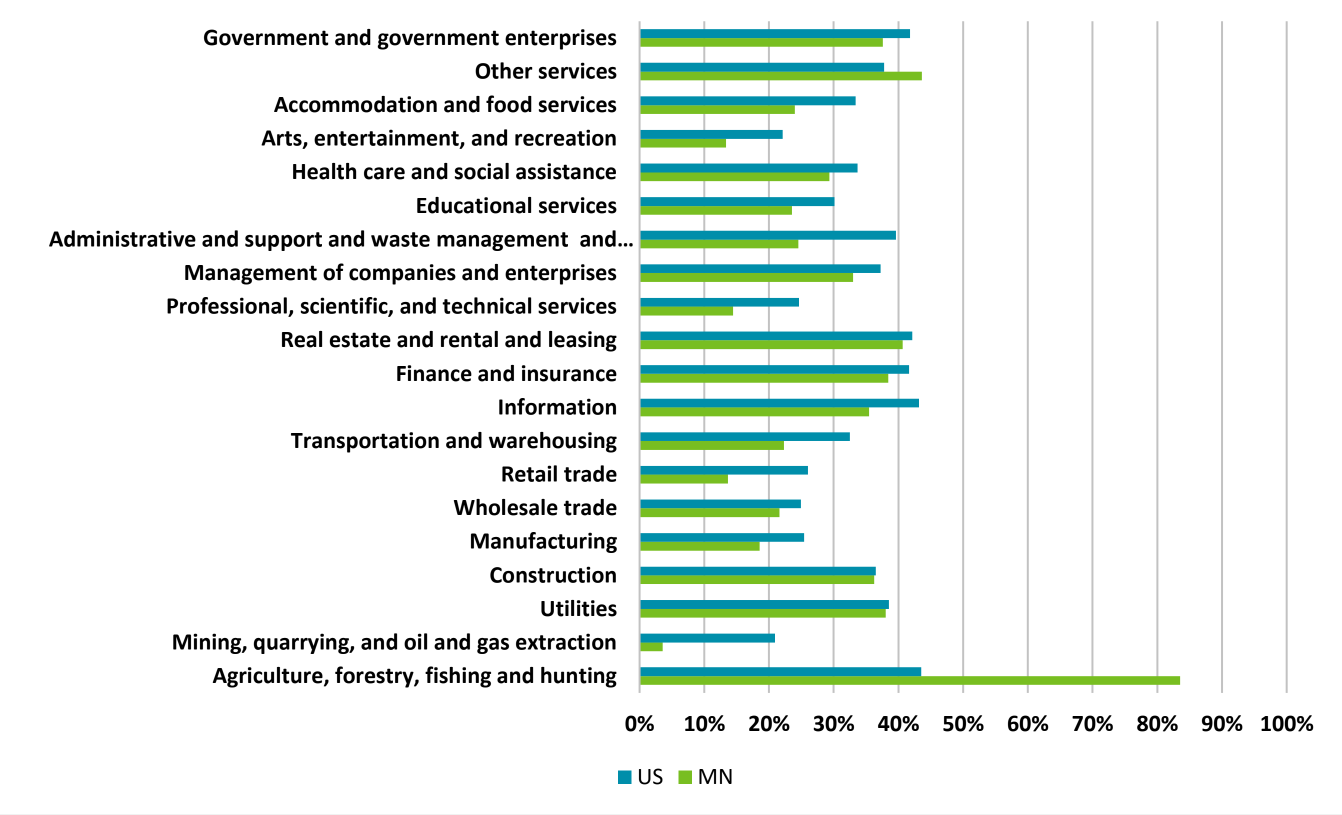
TABLE 16: LOCATION QUOTIENT BY INDUSTRY –MINNESOTA VS. UNITED STATES

Industry	Minnesota (Billions)	United States (Billions)	Location Quotient - MN
Total GDP	$475,590	$27,610,128	1.00
Private industries	$432,590	$24,477,416	1.02
Agriculture	$9,879	$247,408	1.01
Mining	$1,594	$389,374	0.99
Utilities	$7,289	$437,566	1.00
Construction	$23,359	$1,219,718	1.00
Manufacturing	$57,984	$2,853,137	1.02
Wholesale trade	$33,623	$1,624,422	1.02
Retail trade	$29,131	$1,759,186	1.00
Transportation	$17,105	$962,727	1.01
Information	$16,162	$1,496,510	1.00
Finance and insurance	$37,780	$2,004,028	1.00
Real estate	$58,543	$3,707,051	0.98
Professional Services	$32,582	$2,199,702	1.01
Management	$17,306	$512,133	0.99
Administrative services	$12,004	$858,377	0.99
Educational services	$4,425	$315,606	1.02
Health and social service	$45,228	$2,053,045	0.99
Arts and entertainment	$5,252	$317,040	1.00
Accommodation	$12,616	$921,119	1.02
Other Services	$10,728	$599,269	1.00
Government	$43,001	$3,132,712	0.99
Federal civilian	$5,535	$605,521	1.00
Military	$1,707	$396,783	0.98
State and local	$35,759	$2,130,409	0.99

Source: Bureau of Economic Analysis

Between 2018 and 2023, agriculture, other services (non-governmental), and real estate were the fastest growing industries in the State. By contrast, mining, food services, and professional services were the slowest growing industries in the State over this period. Industry growth trends at the national level were similar, with agriculture, information technology, and real estate having the highest rates of growth– each industry averaging 7 percent growth per year. The slowest growing industries nationwide were mining, arts, and professional services. Minnesota outpaced national growth in agriculture, a relatively freight dependent industry.[51]

FIGURE 35: PERCENT GDP GROWTH BY INDUSTRY - U.S. & MINNESOTA (2018-2023)



Source: Bureau of Economic Analysis

EMPLOYMENT TRENDS

According to the U.S. Bureau of Labor Statistics, total non-farm employment in Minnesota is three million as of October 2023. Figure 36 displays year-over-year employment growth for Minnesota and the United States from 2013 to 2022. Though employment in Minnesota has historically grown at a faster pace than the United States over the past decade, the state saw a sharper decline than the nation as a whole during the COVID-19 recession. Since 2020 however, the State has returned to a higher growth trend, even exceeding its pre-recession high as employment recovered in 2022.

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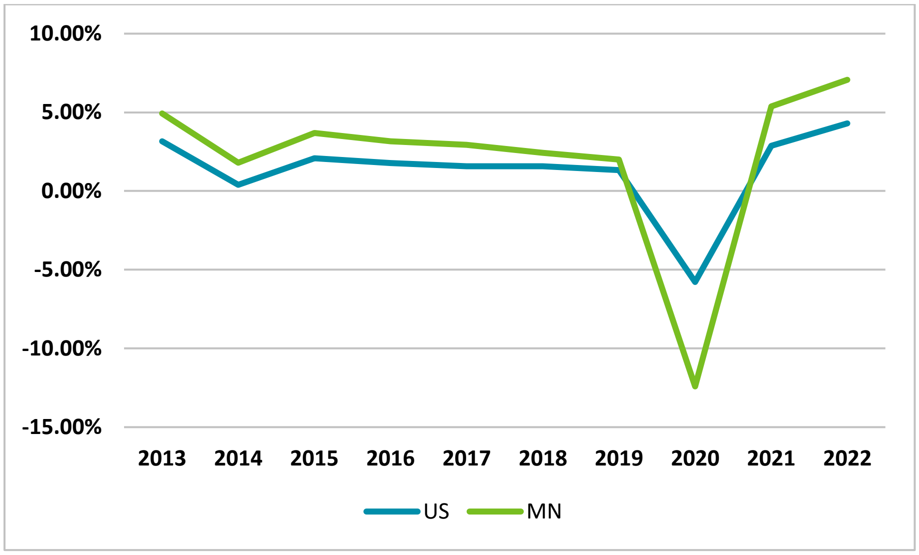
[51] Bureau of Labor Statistics, Industries at a Glance

FIGURE 36. PERCENT CHANGE IN NON-FARM EMPLOYMENT



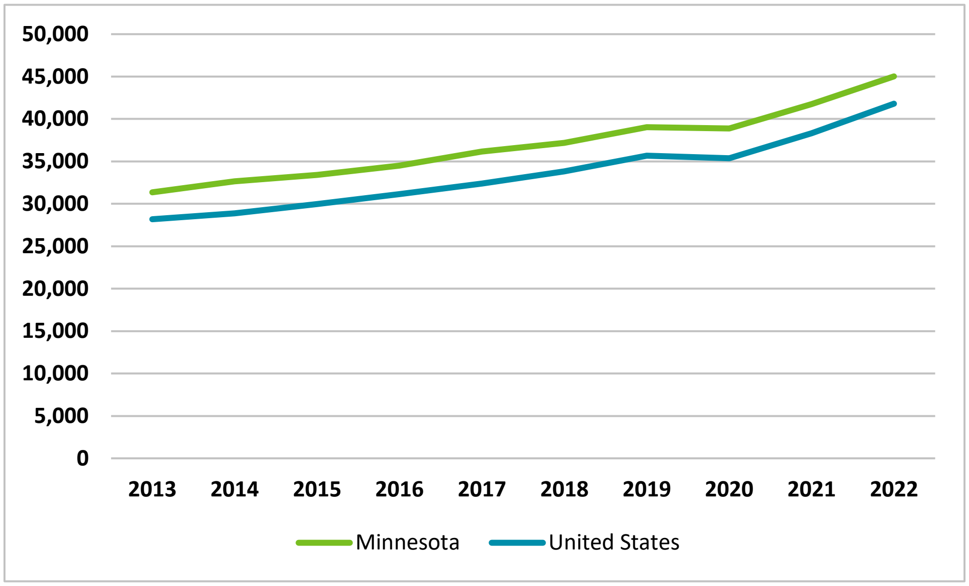
Source: Bureau of Labor Statistics

The Minnesota Office of Employment and Economic Development expects employment levels across the state to continue to rise over the next decade. The office estimates employment will increase by 5 percent from 2020 to 2030, with the largest projected increases in the arts and entertainment industry, accommodation and food services, and healthcare services. Despite the rise in aggregate employment levels, job opportunities are expected to decrease in some of the state's industries, including some that support rail. Sectors expected to decline include agriculture/forestry/fishing/hunting, retail trade, utilities, and real/estate leasing jobs.

INCOME TRENDS

In 2022, Minnesota's per capita personal income was $45,021, nine percent higher than the national per capita personal income figure of $41,261. Over the last 10 years, personal income in Minnesota has grown at an average annual compound growth rate of 4.3 percent, roughly level with the growth rate at the national level. Figure 37 displays per capita income in Minnesota and nationally between 2013 and 2023.

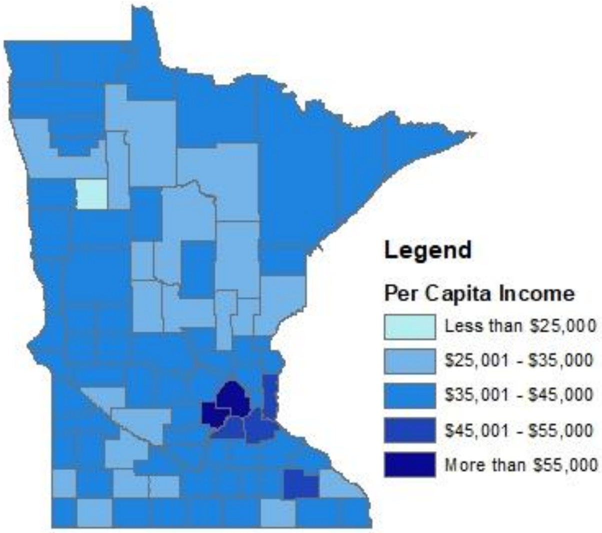
FIGURE 37. PER CAPITA INCOME IN MINNESOTA AND THE U.S.



Source: United State Census Bureau – American Community Survey (5-Year Estimates)

Income growth has varied considerably across regions and localities, however. In 2022, Carver County had the highest median household income in the state, at $116,158. This is 41 percent higher than the state's median income of $82,338. The next two highest-income counties were Scott ($113,331) and Washington counties ($106,509), both of which are part of the Minneapolis-St Paul – Bloomington MSA. Figure 38 shows a heat-map of per capita incomes across the state, and highlights the Duluth and Fargo-Moorhead metropolitan areas as relatively high-income enclaves away from the capital and largest city.

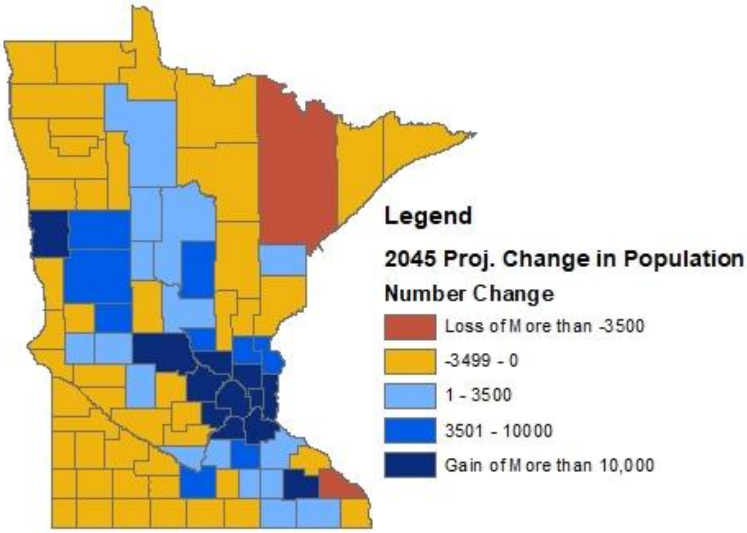
FIGURE 38. PER CAPITA HOUSEHOLD INCOME IN MINNESOTA



Source: United State Census Bureau – American Community Survey (5-Year Estimates)

FORECAST POPULATION GROWTH

FIGURE 30: EXPECTED POPULATION CHANGE BY COUNTY


Legend
2045 Proj. Change in Population
Number Change
🟥 Loss of More than -3500
🟨 -3499 - 0
🟦 1 - 3500
🟦 3501 - 10000
🟦 Gain of More than 10,000

Source: Minnesota State Demographic Center

Population forecasts for the State of Minnesota are drawn from the projections of the Minnesota State Demographic Center. The State is expected to gain 434,000 residents between 2025 and 2045. The five counties with the largest forecast declines in population by 2045 are Saint Louis (- 12,400), Winona (-5,300), Pine (-2,600), Martin (-2,500), and Polk (-2,300). The counties with the largest forecasted increases in population are Hennepin (+119,000), Dakota (+39,900), Wright (+38,700), Washington (+37,500) and Olmsted (+34,500). Three of the leading five counties are in the 7-county Twin-Cities metro area, while Wright and Olmstead are located in central and south-eastern Minnesota respectively.

Despite this expected growth, Minnesota's population is expected to age, with the number of residents above retirement age (65) predicted to climb from 930,000 in 2020, to 1.16 million by 2045. The oldest segment of Minnesota residents - those above the age of 85 - is also expected to reach 188,000 by 2045. As these dynamics play out, the ethnic composition of the State is also undergoing considerable change. At present, the non-hispanic white population accounts for 78 percent of the population, but populations of color are expected to grow to nearly a third of the state population by 2045.[52]

OTHER TRENDS

SAFETY TRENDS

Minnesota's rail network has shown marked improvement across most safety performance measures over the past two decades. These are defined as follows:

- Train accidents are collisions, derailments of trains or other equipment that cause damage to railroad equipment, track or structures. These declined from an average of 58 per year between 2003 and 2012 to an average of 42 per year between 2013 and 2022.
- Highway/rail accidents are collisions where trains hit or are struck by cars, bicycles, or pedestrians at highway/rail grade crossings. The frequency of these accidents decreased from 57 per year between 2003 and 2012 to 43 per year between 2013 and 2022.
- Other accidents/incidents do not fit into the first two categories. Railroad employees are required to report any work-related injuries or sickness, which are categorized as "other accidents/incidents." Situations where trespassers, railroad employees or contractors are struck by trains also fall into the "other" category. The other accidents/incidents declined from an average of 136 occurrences per year between 2003 and 2012 to 105 per year between 2013 and 2022.

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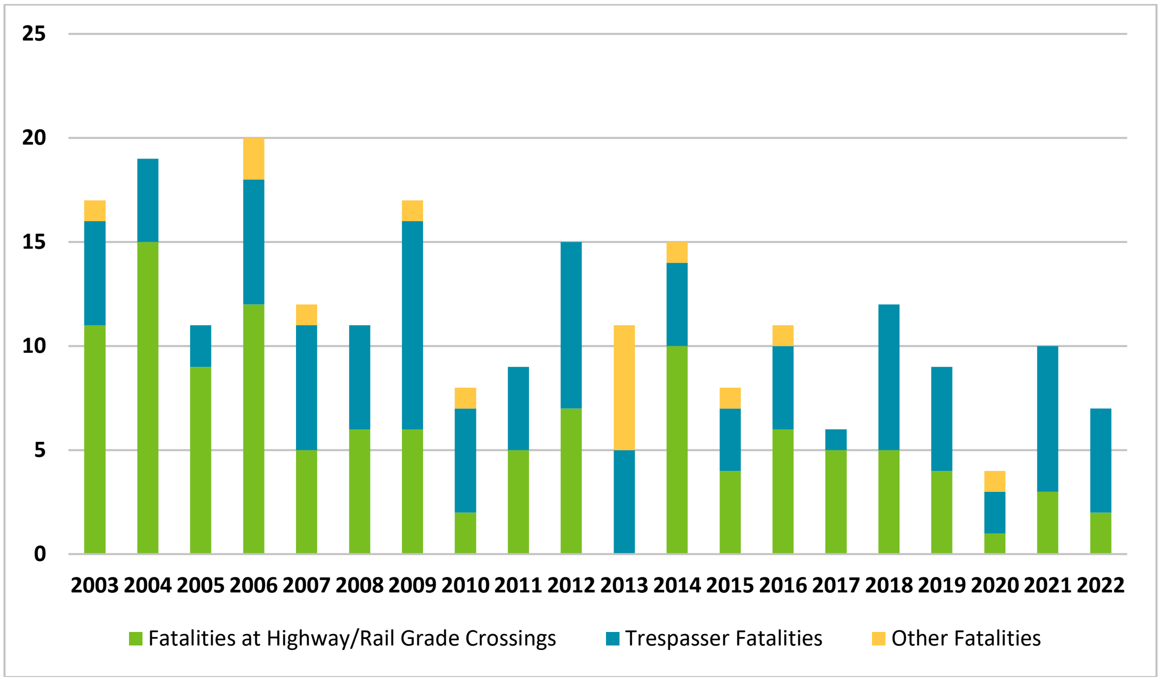
[52] Minnesota State Demographic Center

Most fatalities associated with the State's rail network were the result of either a collision at a highway/rail grade crossing or a trespasser on railroad right-of-way struck by a train. As of 2023, there are more than 4,000 public rail grade crossings in Minnesota. As shown in Figure 40, fatalities at grade crossings have generally declined over the past 20 years, but trespasser fatalities have not.

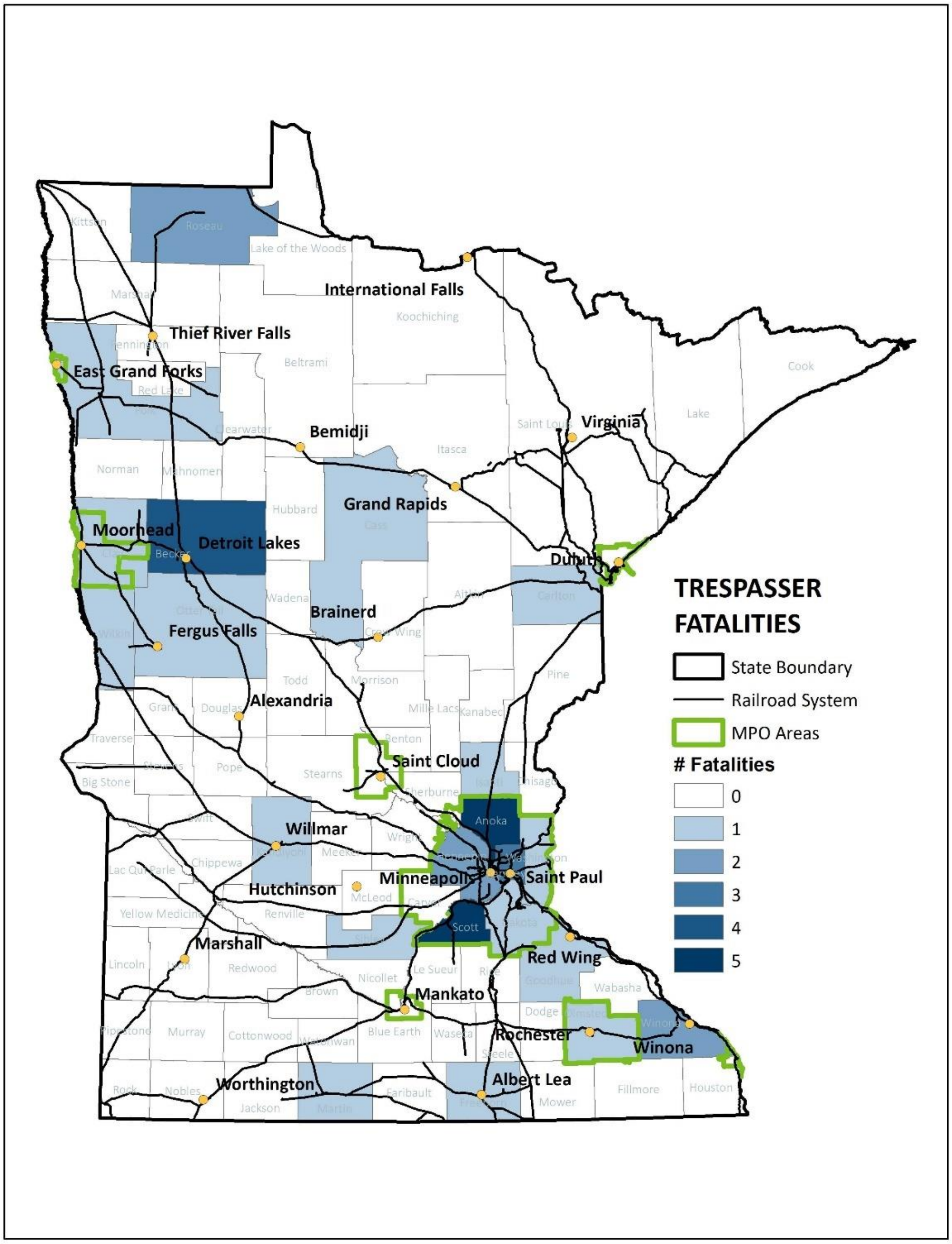
FIGURE 40. RAIL-RELATED FATALITIES BETWEEN 2003 AND 2022



Source: FRA Safety Data

Risks associated with trespassing incidents tend to be greatest in areas with high population density and busy rail corridors. The counties with the most trespasser fatalities or injuries over the past 10 years were Anoka, Sherburne, and Ramsey – all of which are part of the Minneapolis-St. Paul-Bloomington Metropolitan Area. Becker County, which is proximate to the City of Moorhead, is also among the top four. Concentrations of trespasser fatalities are shown in Figure 41.

FIGURE 41. TRESPASSER FATALITIES BY COUNTY BETWEEN 2013 AND 2022

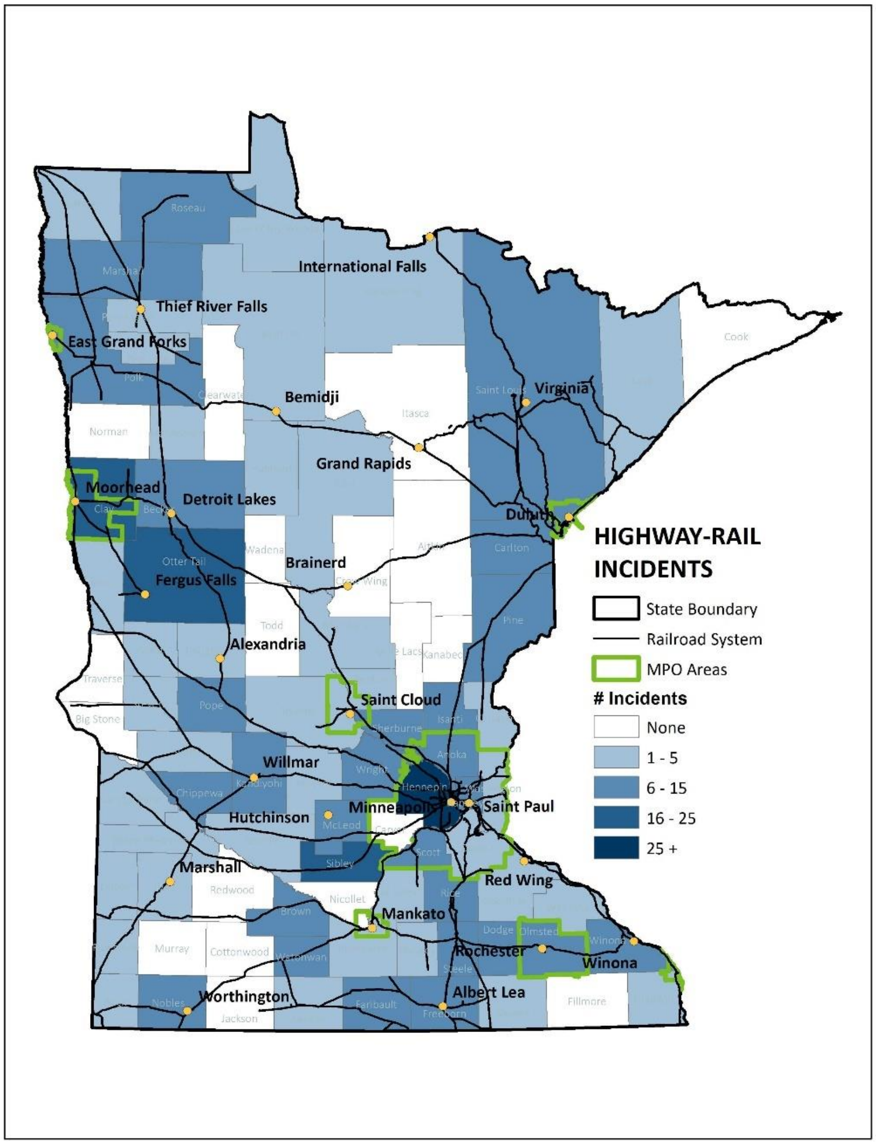


Source: FRA Safety Data, WSP Analysis

Risks associated with rail/highway grade crossings relate generally to the number of crossings and train and automobile traffic volumes. Other parameters impact the level of risk and the counties with the most high-volume crossings are not necessarily the counties with the highest frequency of crashes as well. Hennepin, St.

Louis, Clay, Ottertail, and Ramsey are the counties with the most highway/rail grade-crossing crashes over the past 10 years.[53] Concentrations of highway/rail grade crossing incidents are shown in Figure 42.

FIGURE 42. HIGHWAY/RAIL GRADE GRADE CROSSING INCIDENTS BY COUNTY BETWEEN 2013 AND 2022



Source: Bureau of Economic Analysis

As shown in Figure 43, nearly half of the fatal incidents at highway/rail grade crossings between 2013 and 2022 involved other motor vehicles, while over a third or 37 percent involved pedestrians, and 16 percent involved commercial vehicles.

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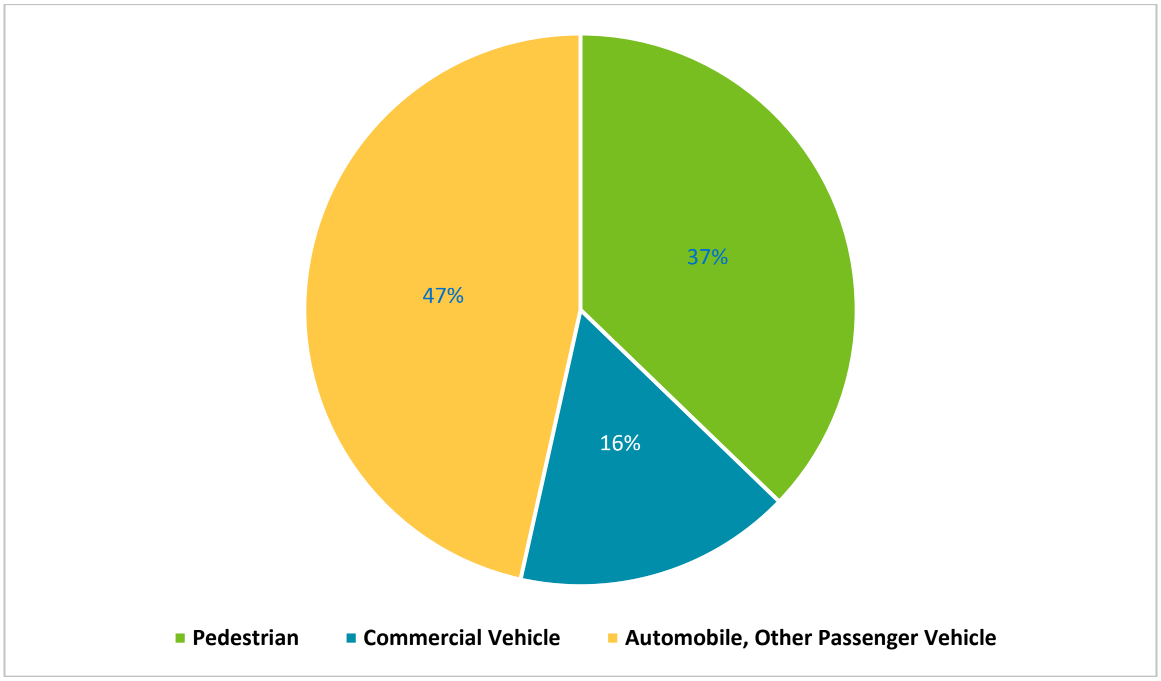
[53] Federal Railroad Administration, Office of Safety Analysis (2022)

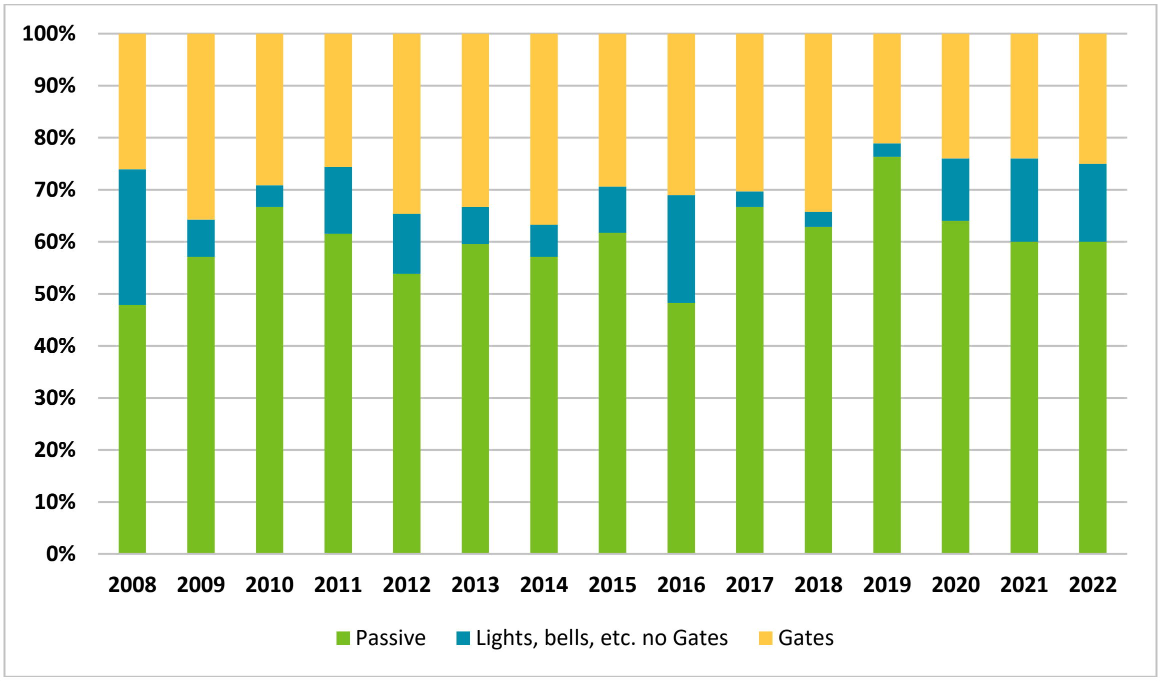
FIGURE 43. PERCENTAGE OF FATAL INCIDENTS AT HIGHWAY/RAIL GRADE CROSSINGS BY USER TYPE BETWEEN 2013 AND 2022



Source: Bureau of Economic Analysis

Most crashes at highway/rail grade crossings in Minnesota occur at crossings with passive warning devices like crossbucks, stop signs, rather than gates or other train-activated devices. As shown in Figure 44, the distribution of crashes by crossing protection type did not follow any specific trend between 2008 and 2022.

FIGURE 44. PERCENTAGE OF CRASHES AT HIGHWAY/RAIL GRADE CROSSINGS BY TYPE OF PROTECTION



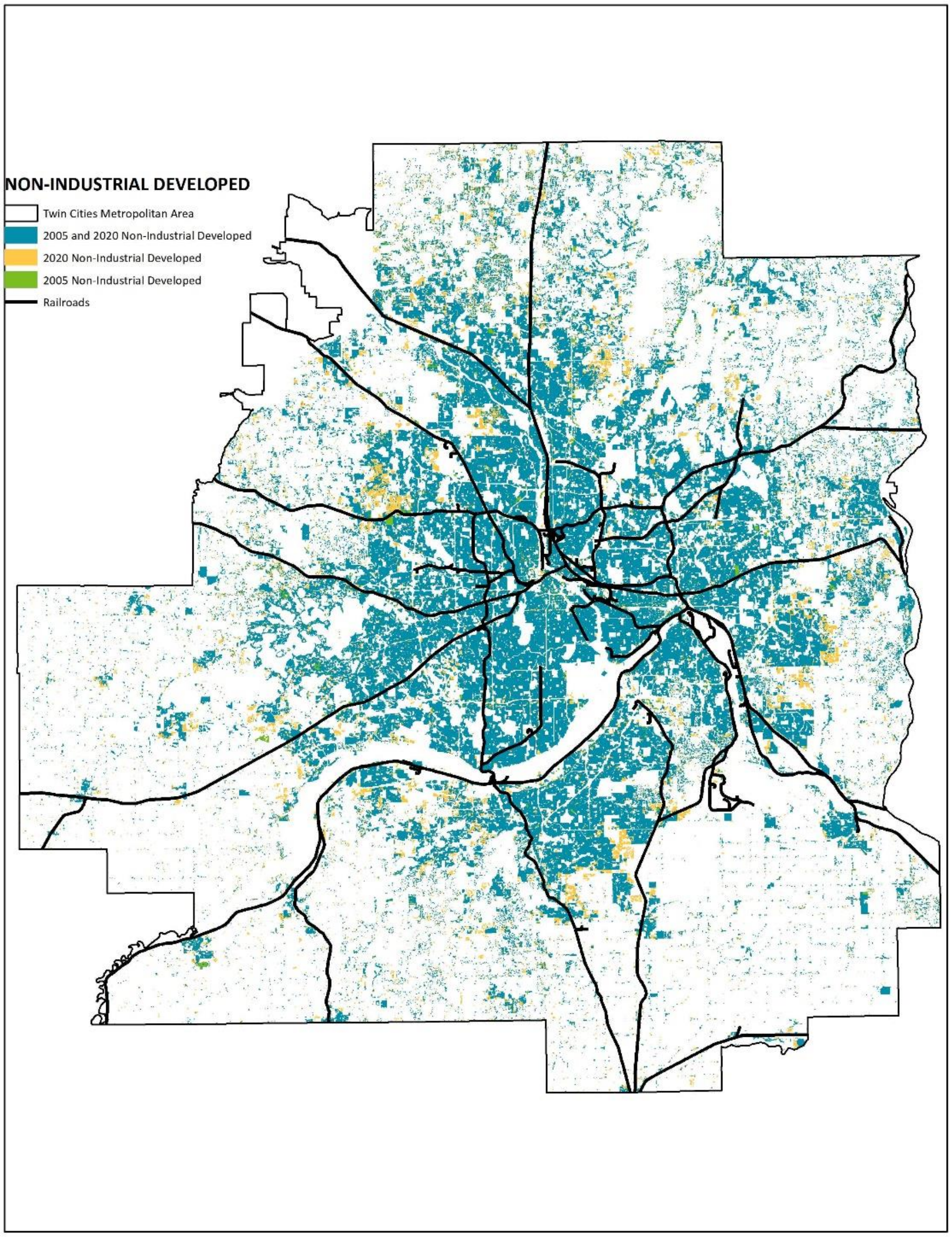
Source: Bureau of Economic Analysis

LAND USE TRENDS

During outreach conducted for this Plan, freight railroads have expressed concern about land use trends in urban areas, particularly the Twin Cities, and the potential impact on railroad customer base. Railroads are concerned that encroachment by other uses reduces the locations available to maintain a viable industrial base in urban areas. Furthermore, these other uses such as residential/commercial on formerly industrial property create conflicts between railroads, railroad customers and adjacent property owners. New industrial development occurs where property prices are lower on the outer fringes of the metropolitan area and are added in locations without rail service.

An analysis of land use records maintained by the Metropolitan Council suggests that between 2005 and 2020, the acreage of land devoted to residential, commercial, office, and other developed non-industrial uses increased by 11.5 percent within the Twin Cities area. As shown in Figure 45, railroads operating within the Twin Cities operate within a highly developed area, which continues to be more developed over time. This can limit properties available to railroad customers in the Twin Cities.

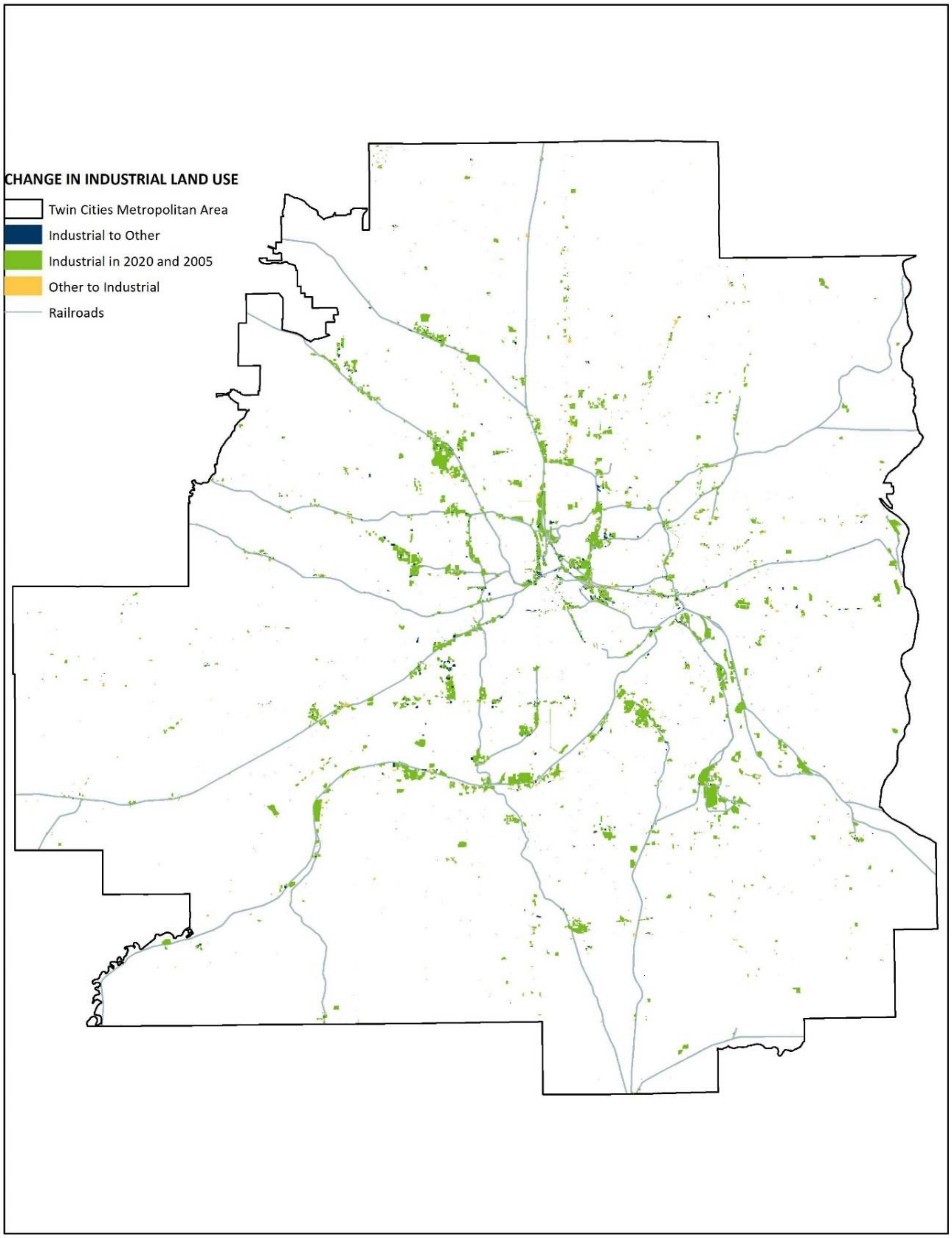
FIGURE 45. RAIL AND NON-INDUSTRIAL DEVELOPMENT IN THE TWIN CITIES METROPOLITAN AREA


NON-INDUSTRIAL DEVELOPED
Twin Cities Metropolitan Area
2005 and 2020 Non-Industrial Developed
2020 Non-Industrial Developed
2005 Non-Industrial Developed
Railroads

Source: Metropolitan Council

Data from the Metropolitan Council suggests that the acreage of properties within a quarter mile of rail lines zoned industrial increased slightly by 377 acres between 2005 and 2020. As shown in Figure 46, many of the areas zoned industrial in the Twin Cities metropolitan area located near rail lines. However, the supply of industrial properties has changed so that former industrial properties have been converted to other uses, while other properties have been converted to industrial. Some formerly rail-served properties may be converted to other uses, while new industrial properties may be located near rail lines but not rail-served. Also, industrial areas that are not rail-served compete with those that are rail-served, particularly those that are along major roadway corridors. Some examples are apparent in Figure 46 as parcels zoned industrial follow a linear pattern, some along rail lines, and some not on rail lines.

FIGURE 46. RAIL AND INDUSTRIAL DEVELOPMENT IN THE TWIN CITIES METROPOLITAN AREA


CHANGE IN INDUSTRIAL LAND USE
Twin Cities Metropolitan Area
Industrial to Other
Industrial in 2020 and 2005
Other to Industrial
Railroads

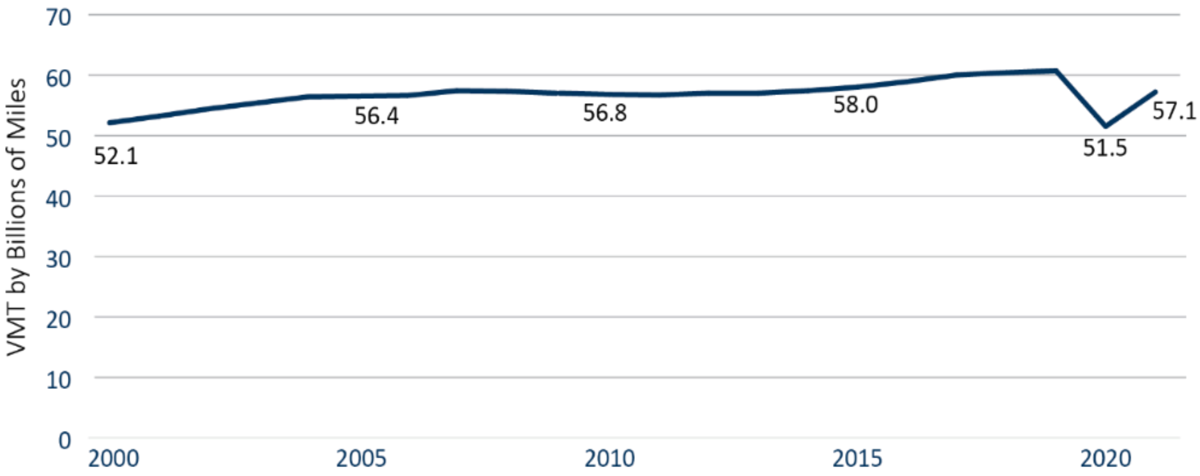
Source: Metropolitan Council

MODAL PERFORMANCE TRENDS

PASSENGER TRAVEL DEMAND AND GROWTH

Passenger rail service provides an alternative to private vehicles and can alleviate congestion caused by growth in passenger vehicle travel. As illustrated in Figure 47, passenger statewide vehicle miles traveled (VMT) increased 16.5 percent from 52.1 billion yearly VMT to 60.7 billion yearly VMT between 2000 and 2019.[54] From 2018 to 2019 VMT decreased by 1 percent and in 2020 VMT dropped to 51.5 billion VMT because of the COVID-19 pandemic. MnDOT's 2022 Vehicle Miles Traveled Report (published 2023) found VMT to have nearly returned to pre-pandemic levels at approximately 57.5 billion yearly VMT.[55] Figure 48 illustrates the share of VMT distributed by roadway system. The State Highway System carries about 57 percent of VMT in the state.[56]

FIGURE 47. TOTAL VEHICLE MILES TRAVELED IN MINNESOTA, 2000-2021



Source: Statewide Multimodal Transportation Plan

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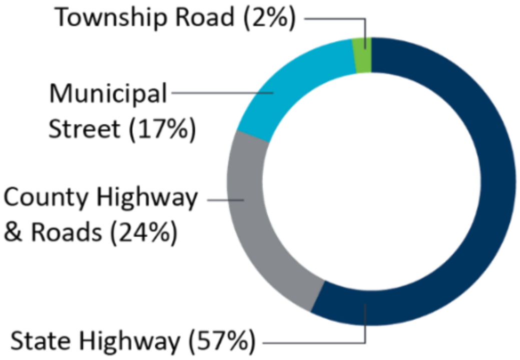
[54] Minnesota Department of Transportation, Minnesota GO Statewide Multimodal Transportation Plan https://minnesotago.org/final-plans/smtp-final-plan-2022/chapter-2.

[55] Minnesota Department of Transportation, Vehicle Miles of Travel Trends in Minnesota, Office of Transportation System Management, March 2024, https://edocs-public.dot.state.mn.us/edocs_public/DMResultSet/DisplayDoc?docnumber=20012322&identifier=20012322.

[56] Minnesota Department of Transportation, Minnesota GO Statewide Multimodal Transportation Plan https://minnesotago.org/final-plans/smtp-final-plan-2022/chapter-2.

FIGURE 48. PERCENTAGE OF VEHICLE MILES TRAVELED BY ROADWAY SYSTEM, 2020



HIGHWAY CONGESTION

Data is only available for sections of the Minnesota state highway system. Using the trends on these segments and assuming consistency with the whole highway system, VMT is projected to increase 43 percent between 2020 conditions and 2040.[57] VMT is projected to decrease in only two locations, both along I-94 to the northwest of Minneapolis-St. Paul, a 1.55 percent decrease at the intersection of I-94 and Minnesota State Highway 25 and a decrease of 22.29 percent at the intersection of I-95 and Minnesota State Highway 101. The highest projected increase in VMT is 315.79 percent at the interchange between U.S. Route 169 and Minnesota State Highway 13 located to the southwest of Minneapolis-St. Paul. The second largest increase is 107 percent on Minnesota State Highway 5 approaching downtown St. Paul.

With an increase of VMT across the state, and especially in the Minneapolis-St. Paul region, congestion will continue to get worse without capital investment. With higher VMT the volume to capacity ratio will continue to increase resulting in congestion. Rail could provide alternative transportation options and alleviate congestion, and investment in these transportation alternatives can serve as an alternative to investment in roadway capacity.

FUEL COST TRENDS

Research has shown that a positive correlation exists between long-term effects of gasoline costs and rail usage, all else being equal. For example, the Mineta Transportation Institute found a significant relationship indicating a 10 percent increase in gasoline prices increased total ridership of transit (including fixed commuter rail) by 1.16 percent.[58] Prices of all fuel types have increased since 1995 as seen in Figure 49 and Figure 50. After a period of relatively low fuel prices, the fuel prices spiked during 2022. The fuel spike relates to crude oil price peaking at $114.44 per barrel in July 2022.[59] By the end of 2022 the price of crude oil dropped to $76.56 per barrel and retail gas prices began to fall. The U.S. Energy Information Administration projects that retail prices will level out at between $3.00 and $4.00 and continue to trend downward into the near future as shown in Figure 51.

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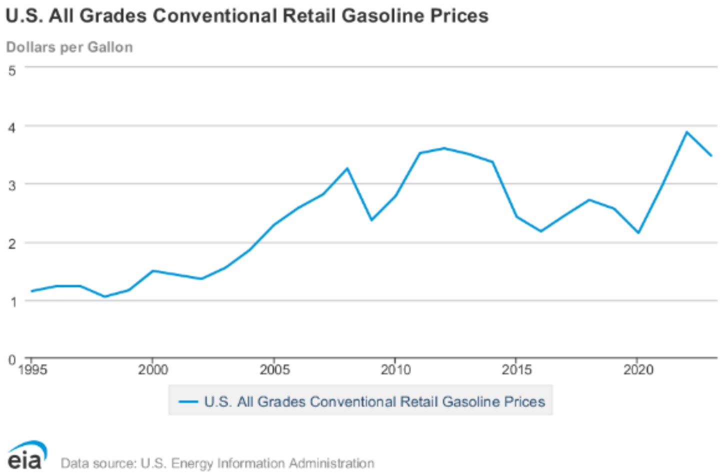
[57] Federal Highway Administration, National Highway System: Minnesota Geodatabase, March 2015 https://www.fhwa.dot.gov/planning/national_highway_system/nhs_maps/minnesota/

[58] Hiroyuki Iseki, Ph.D., Rubaba Ali for the Mineta Transportation Institute, Net Effects of Gasoline Price Changes on Transit Ridership in US Urban Areas, December 2014

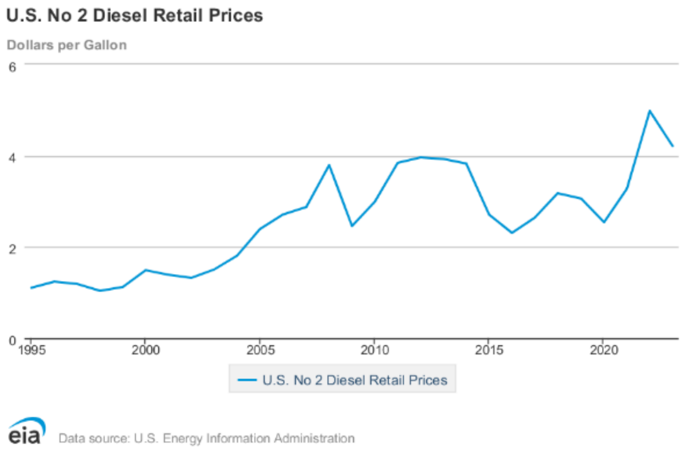
[59] U.S. Energy Information Administration, Oil and Petroleum Products Explained: Oil Prices and Outlook, August, 2023, https://www.eia.gov/energyexplained/oil-and-petroleum-products/prices-and-outlook.php

FIGURE 49. CONVENTIONAL RETAIL GASOLINE PRICES



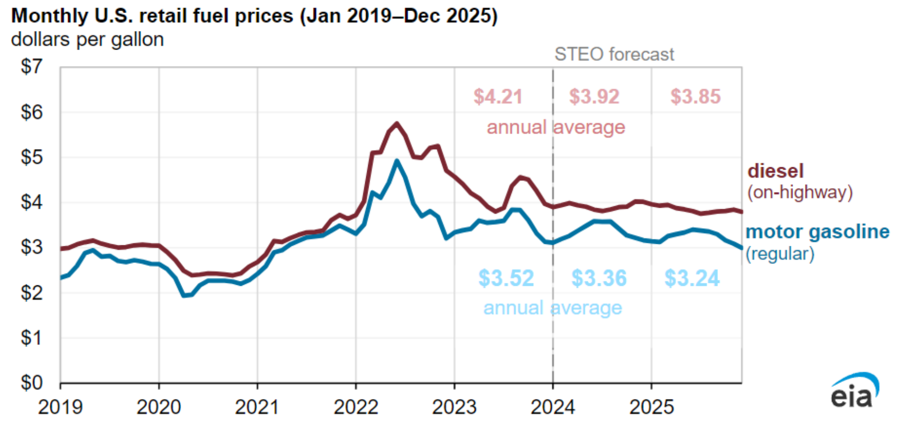
Data source: U.S. Energy Information Administration

FIGURE 50. NO. 2 DIESEL RETAIL PRICES



Data source: U.S. Energy Information Administration

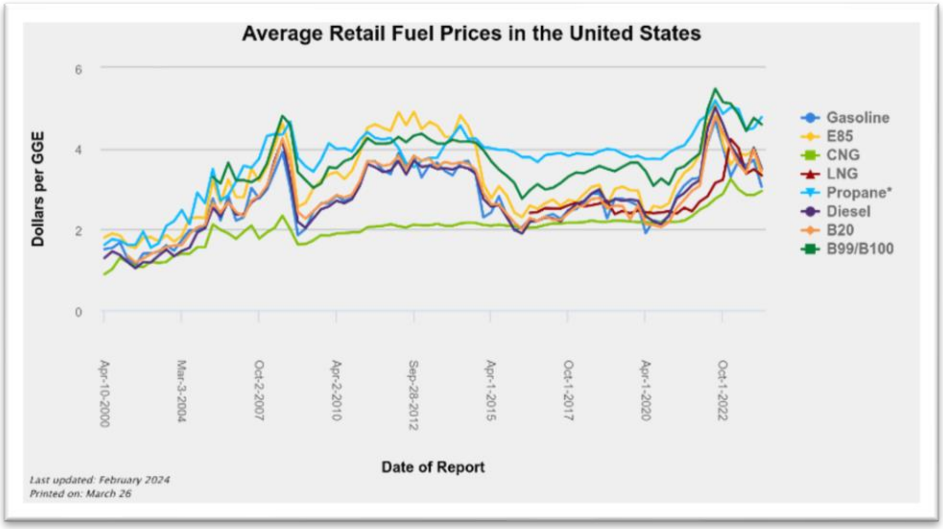
FIGURE 51. U.S. RETAIL FUEL PRICES FORECAST (JAN 2019-DECEMBER 2025)



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook* (STEO), January 2024

Historic alternative fuel prices generally mirror the retail gas and diesel price trends shown in Figure 52. However, as alternative fuel and electrification technology continue to develop, associated costs of using alternative fuels may decrease. If consumers show a preference for alternative fuels in the future, demand for retail gas and diesel could decrease, which may impact future prices of retail gas and diesel.

FIGURE 52. AVERAGE RETAIL FUEL PRICES IN THE UNITED STATES



Source: Alternative Fuels Data Center

AIRPORT CONGESTION TRENDS

Nine airline service airports are located in Minnesota: Bemidji Regional Airport (BJI), Brainerd Lakes Regional Airport (BRD), Duluth International Airport (DLH), International Falls Airport (INL), Minneapolis/St. Paul International Airport (MSP), St. Cloud Regional Airport (STC), Thief River Falls Airport (INL), Range Regional Airport at Hibbing (HIB), and Rochester International Airport (RST).

MSP is the largest airport in the state and the 15th largest in the United States by passenger service. MSP is a Delta hub. In 2023 MSP served more than 34 million passengers, an 11.3 percent increase from 2022. MSP accommodated 323,929 takeoffs and landings, a 4.4 percent increase from 2022.

Airport on-time performance can be a metric for congestion. A flight is considered on time if it arrives or departs from a gate within 15 minutes of the scheduled time. If flights are not on-time, this could be a sign of congestion. MSP had an on-time departure rate of 83.25 percent and a global on time departure rate of 84.44%, making it the highest performing airport in the world.[60]

Rail and air travel could potentially compete between Minneapolis-St. Paul and Chicago. Currently eight airlines provide an average of 50 flights per day between MSP and Chicago O'Hare or Midway International. Flights per day fluctuate by day of the week and time of the year. The Amtrak Empire Builder service provides 2 trips per day, one in each direction between the Twin Cities and Chicago. The planned second daily round trip could provide more flexible travel schedules and lead to more competition between the two modes of transportation.

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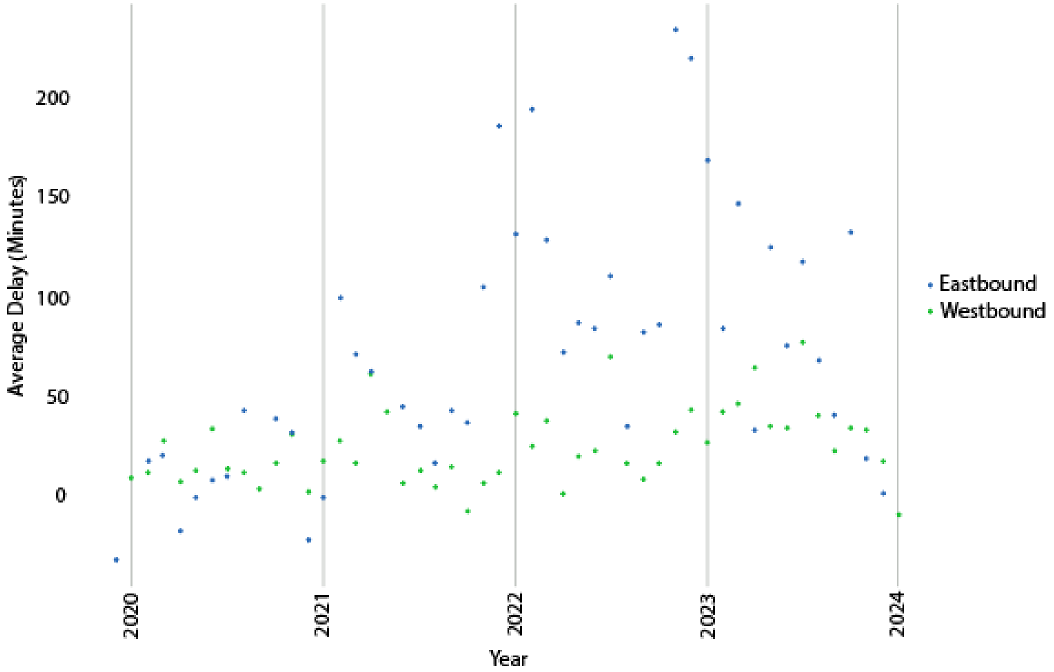
[60] Ciriu Aviation Analytics, Most On Time Airlines and Airports of 2023 unveiled by Cirium, January 2024, https://www.cirium.com/thoughtcloud/most-on-time-airlines-airports-of-2023-unveiled-by-cirium/

RAIL CONGESTION TRENDS

Error! Reference source not found. provides a scatter plot that shows the average monthly delay for Amtrak E mpire Builder trains in both eastbound and westbound directions, plotted against month/year. Delays generally increased from 2020 to 2022 and 2023 for both directions, and then delays declined toward the end of 2023.

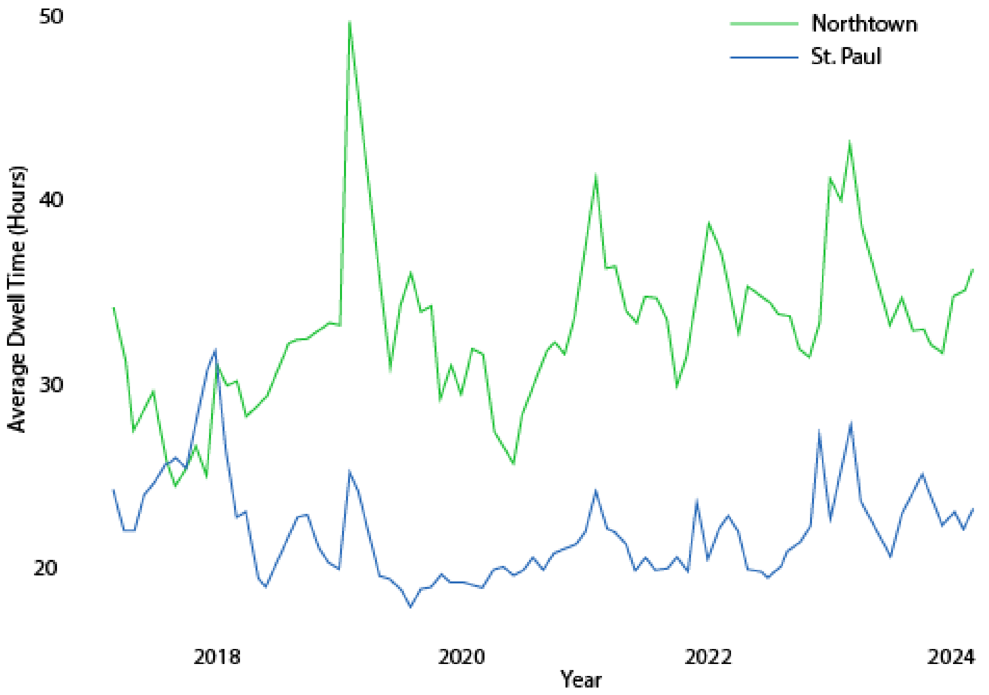
FIGURE 53. AVERAGE MONTHLY DELAY FOR EAST AND WESTBOUND TRAINS ON THE AMTRAK EMPIRE BUILDER



Source: Amtrak Status Maps Archive database

From 2017 to 2024 the average terminal dwell time at the BNSF facility in Northtown has trended higher, seen in Figure 54. There have been several spikes in dwell time; 2019, 2021, 2022, and 2023. Spikes correspond to the beginning of a new year. Average dwell times by year rose from 27 hours in 2017 up to 30+ hours in the following years. CPKC in St. Paul has shorter dwell times than BNSF and have remained steady. Dwell times are between 20-25 hours on average each year. There were spikes in 2018, 2019, and 2023.

FIGURE 54. AVERAGE DWELL TIMES IN NORTHTOWN AND ST. PAUL



Source: EP724 Consolidated Data

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TABLE 17. TABLE/FIGURE TITLE

Column A	Column B	Column C	Column D
First Result	Second Result	Third Result	Fourth Result
Fifth Result	Sixth Result	Seventh Result	Eight Result
Ninth Result	Tenth Result	Eleventh Result	Twelfth Result
Thirteenth Result	Fourteenth Result	Fifteenth Result	Sixteenth Result

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APPENDIX A: ENVIRONMENTAL JUSTICE AND TRANSPORTATION EQUITY ANALYSIS

This appendix provides an analysis of the statewide rail system's benefits and burdens on environmental justice populations, which include: Black, Indigenous, and People of Color (BIPOC), people who are low-income, people who have limited English proficiency, people who are age 65 or older and age 16 or younger, and households without a vehicle. This analysis uses both qualitative and quantitative data analysis to review existing conditions and provide recommendations to avoid, minimize, or mitigate burdens through the project planning and decision-making process.

ENVIRONMENTAL JUSTICE OVERVIEW

U.S. Presidential Executive Order 12898, issued in 1994, directed each federal agency to "make achieving environmental justice (EJ) part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations." The order builds on Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color or national origin. The order also provides protection to low-income groups. The three fundamental EJ principles are to:

- Avoid, minimize or mitigate disproportionately high adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Executive Order 12898 and U.S. Department of Transportation define minority and low-income populations as:

- Black – a person having origins in any of the black racial groups of Africa.
- American Indian and Alaskan Native – a person having origins in any original people of North America and who maintains cultural identification through tribal affiliation or community recognition.
- Asian – a person having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent.
- Native Hawaiian or Other Pacific Islander – a person having origins in any of the original people of Hawaii, Guam, Samoa and other Pacific Islands.
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
- Low-income – a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

While not specifically identified by Title VI or the Executive Order, MnDOT chooses to expand its Environmental Justice analyses to include people age 65 and older, people age 16 and younger, people with limited English proficiency, and households with zero vehicles because these groups tend to have additional transportation needs. These groups in addition to those listed in the executive order will be collectively referred to as "EJ populations" unless referred to specifically.

OVERVIEW OF TRANSPORTATION EQUITY AT MNDOT

In 2022, MnDOT adopted a Transportation Equity Statement of Commitment in the Statewide Multimodal Transportation Plan (SMTP):

> Acknowledgment of Past Harms
>
> MnDOT acknowledges the transportation system and agency decisions have underserved, excluded, harmed and overburdened some communities. We understand some of our past decisions denied Black and Indigenous communities as well as people with disabilities the full participation of transportation benefits. These and other underserved communities have historically carried disproportionate burdens of transportation decisions.
>
> What Transportation Equity Means to MnDOT
>
> MnDOT is committed to creating an equitable transportation system. Transportation equity means the benefits and burdens of transportation systems, services and spending are fair and just, which historically has not been the case. Transportation equity requires ensuring underserved communities, especially Black, Indigenous and People of Color, share in the power of decision making. The journey of transforming our transportation systems, services and decision-making processes will require ongoing listening, learning, changing, implementing and adapting. Everyone in our agency regardless of position or work assignment has a role to advance transportation equity. We will partner with community members, community-based organizations, transportation service providers, Tribal Nations and government institutions to evolve our work and to change outcomes for our communities.

Historically, transportation policy, design, and operations decisions have led to inequities for EJ populations, and these communities continue to bear a disproportionate burden of the negative impacts of those decisions today. Advancing environmental justice and transportation equity means that the benefits and burdens resulting from transportation investments and policy decisions are equitably distributed among all communities. MnDOT does this by working toward three fundamental environmental justice principles:

- Avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations

- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process

- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.[61]

In the context of a state rail system, transportation equity and environmental justice means that the planning, development, and operation of the rail system do not disproportionately burden or harm EJ populations.

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[61] Environmental justice at MnDOT, www.mndot.gov/environmentaljustice

OVERVIEW OF MINNESOTA'S EJ POPULATION

According to the U.S. Census, American Community Survey 2022 5-Year Estimates, there are 5,695,292 people living in Minnesota. Table 18 shows Minnesota's population based on race, ethnicity, age, limited English proficiency and households with zero vehicles. As noted in the table:

- Approximately 20 percent of Minnesota's population is Black, Indigenous, and People of Color (BIPOC)
- Minnesota's Black population is the state largest minority population, closely followed by Hispanic and Asian populations
- People age 65 and older account for approximately 17% of the state's population, while those 16 and under account for 20 percent
- Approximately 12 percent of households are below the poverty level
- Approximately 5 percent of people are limited English-speaking
- Nearly 7 percent of Minnesota households do not have a vehicle

TABLE 18. MINNESOTA DEMOGRAPHICS, U.S. CENSUS, 2022 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES

Population	Total Group Population	Percent of Population
Total population	5,695,292	100.00%
Total households	2,256,126	100.00%
White alone	4,537,219	79.76%
Black alone	382,082	6.71%
American Indian or Alaska Native alone	51,434	0.90%
Asian alone	286,146	5.02%
Native Hawaiian and Other Pacific Islander alone	2,324	0.04%
Some other race alone	133,098	2.34%
Two or more races	302,989	5.32%
Hispanic	327,049	5.74%
Age 65 and older	939,396	16.49%
Age 16 and under	1,158,045	20.33%
Households below the poverty level[62]	278,388	12.34%
Limited English-speaking people[63]	240,339	4.49%
Households with zero vehicles	148,463	6.58%

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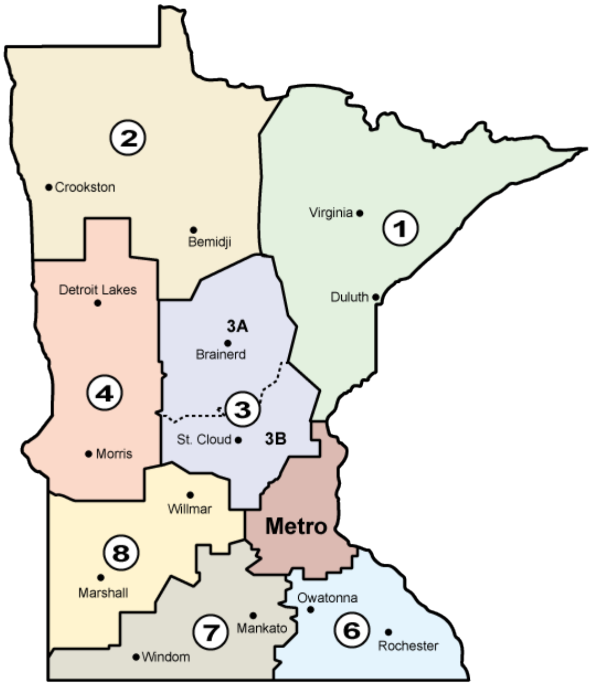
[62] Households with incomes less than $25,000.

[63] For population 5 years and older. Total estimated Minnesota population age 5 and older is 5,354,746.

Race/ethnicity, socioeconomic status and other demographic factors are important to understand because they can be an indicator of one's health, access, and life outcomes. EJ populations in Minnesota tend to disproportionately bear the burdens of the statewide transportation system. Minnesota continues to grow more diverse, but economic and social disparities continue to persist throughout the state. As Minnesota looks to the future, the transportation system needs to adapt to changing needs and address systemic disparities that reinforce and reproduce harms. Transportation infrastructure and policy are one way to serve EJ populations more equitably.

FIGURE 55. MNDOT DISTRICTS



While Table 19 provides a statewide overview, Table 20 through Table 22 provide a breakdown of these populations based on MnDOT Districts (Figure 55).

TABLE 19. RACE/ETHNICITY BY MNDOT DISTRICT

MnDOT District	Total Population	White alone	Percent White alone	Black alone	Percent Black alone	American Indian or Alaskan Native alone	Percent American Indian or Alaskan Native alone	Asian alone	Percent Asian alone
1	355,085	322,046	90.70%	5,020	1.41%	7,877	2.22%	2,687	0.76%
2	164,074	139,246	84.87%	2,047	1.25%	11,181	6.81%	1,458	0.89%
3	694,621	620,650	89.35%	21,706	3.12%	5,994	0.86%	8,367	1.20%
4	256,902	230,650	89.78%	4,489	1.75%	5,421	2.11%	1,972	0.77%

MnDOT District	Total Population	White alone	Percent White alone	Black alone	Percent Black alone	American Indian or Alaskan Native alone	Percent American Indian or Alaskan Native alone	Asian alone	Percent Asian alone
Metro	3,205,294	2,335,81	72.87%	317,081	9.89%	16,152	0.50%	246,940	7.70%
6	517,713	444,981	85.95%	20,550	3.97%	1,800	0.35%	16,834	3.25%
7	290,400	256,681	88.39%	6,723	2.32%	1,225	0.42%	4,874	1.68%
8	211,203	187,148	88.61%	4,466	2.11%	1,784	0.84%	3,014	1.43%

MnDOT District	Total Population	Native Hawaiian and Other Pacific Islander alone	Percent Native Hawaiian and Other Pacific Islander alone	Some Other Race alone	Percent Some Other Race alone	Two or More Races	Percent Two or More Races	Hispanic	Percent Hispanic
1	355,085	75	0.02%	1,811	0.51%	15,569	4.38%	6,843	1.93%
2	164,074	50	0.03%	1,531	0.93%	8,561	5.22%	6,006	3.66%
3	694,621	145	0.02%	9,345	1.35%	28,414	4.09%	21,534	3.10%
4	256,902	416	0.16%	2,878	1.12%	11,076	4.31%	9,435	3.67%
Metro	3,205,294	776	0.02%	91,488	2.85%	197,040	6.15%	211,477	6.60%
6	517,713	522	0.10%	10,626	2.05%	22,400	4.33%	31,678	6.12%
7	290,400	85	0.03%	8,367	2.88%	12,445	4.29%	23,994	8.26%
8	211,203	255	0.12%	7,052	3.34%	7,484	3.54%	16,082	7.61%

Source: 2022 American Community Survey 5-Year Estimates

Table 20 provides a breakdown of the race/ethnicity of people within each District. Metro District, which includes the Twin Cities metropolitan area, has the largest population (56.3% of the state’s total population) and the largest BIPOC population (27.1% of Metro’s total population is BIPOC). However, breaking the population data down by race/ethnicity shows that:

- The majority of the state’s Black population (83.0%), Asian population (86.3%), and Hispanic population (64.7%) live in the Metro District.
- Although District 2 has the smallest total population, it has the largest American Indian or Alaskan Native population outside the Metro.

- As a percentage of the total District population, District 2 has the largest American Indian or Alaskan Native population (6.8%).
- As a percentage of the total District population, District 7 has the largest Hispanic population (8.3%).

TABLE 20. PEOPLE AGE 65 AND OLDER AND AGE 16 AND UNDER BY MNDOT DISTRICT

MnDOT District	Total District Population	Age 65 and Older Population	Age 65 and Older Percent of District Population	Age 16 and Under Population	Age 16 and Under Percent of District Population
1	355,085	77,646	21.87%	59,422	16.73%
2	164,074	32,471	19.79%	34,235	20.87%
3	694,621	114,241	16.45%	148,955	21.44%
4	256,902	52,749	20.53%	52,733	20.53%
Metro	3,205,294	472,652	14.75%	655,721	20.46%
6	517,713	93,072	17.98%	104,923	20.27%
7	290,400	53,557	18.44%	57,742	19.88%
8	211,203	43,008	20.36%	44,314	20.98%

Source: 2022 American Community Survey 5-Year Estimates

As shown in Table 21, District 1 has the largest percentage (21.9%) of people age 65 and older. The Metro District has the smallest percentage (14.8%) of people age 65 and older. District 3 has the highest percentage of those age 16 and younger (21.4%), while District 1 has the smallest percentage (16.7%) of people 16 and younger.

TABLE 21. HOUSEHOLDS BELOW THE POVERTY LEVEL BY MNDOT DISTRICT

MnDOT District	Total District Households	District Households Below Poverty Level	Percent below Poverty Level
1	149,230	25,908	17.36%
2	65,697	11,298	17.20%
3	265,201	34,002	12.82%
4	105,418	17,264	16.38%
Metro	1,264,187	132,493	10.48%
6	206,181	26,954	13.07%
7	115,457	17,232	14.93%
8	84,755	13,237	15.62%

Source: 2022 American Community Survey 5-Year Estimates

Using American Community Survey data for households with a yearly income less than $25,000, Table 21 shows the estimated number of households below the poverty level. An estimated 12.3%, or approximately 278,388 Minnesota households, are below poverty level. District 1 and 2 have the highest percentage of their populations below the poverty level, 17.4% and 17.2% respectively.

TABLE 22. LIMITED ENGLISH-SPEAKING POPULATION BY MNDOT DISTRICT

MnDOT District	Total District Population age 5 years and older	District Limited English-Speaking Population age 5 years and older	Percent Limited English-Speaking age 5 years and older
1	338,380	2,417	0.71%
2	154,182	1,677	1.09%
3	651,932	12,301	1.89%
4	241,468	3,680	1.52%
Metro	3,009,478	184,858	6.14%
6	487,513	18,974	3.89%
7	273,573	10,250	3.75%
8	198,220	6,182	3.12%

Source: 2022 American Community Survey 5-Year Estimates

Table 22 shows the estimated number of Minnesotans who speak English “less than very well” according to the American Community Survey. This is important to MnDOT because language can be a barrier to participate in transportation planning processes. As the table shows, an estimated 4.5%, or 240,339 Minnesotans over the age of 5, speak English “less than very well.” Of those who speak limited English, most live in the Metro District.

TABLE 23. LANGUAGES SPOKEN AT HOME IN MINNESOTA

Language	Total Population	Percent of Total Population	Population that speaks English “less than very well”	Percent of Population that speaks English “less than very well”
English only	4,711,130	88.00%	N/A	N/A
Spanish	208,102	3.90%	77,964	1.50%
Other Indo-European Languages	106,681	2.00%	28,158	0.50%
Asian and Pacific Islander Languages	182,913	3.40%	79,353	1.50%
Other Languages	145,920	2.70%	54,864	1.00%

Source: 2022 American Community Survey 5-Year Estimates

Table 23 compares languages spoken by people who speak English "less than very well." Spanish is the most common language spoken in Minnesota besides English. Similar percentages of the total population speak Spanish and Asian and Pacific Islander languages, which includes Hmong, Chinese, Vietnamese and other Asian languages. Other languages include African languages like Amharic and Somali.

TABLE 24. HOUSEHOLDS WITH ZERO VEHICLES BY MNDOT DISTRICT

MnDOT District	Total District Households	Households with No Vehicle	Percent of Households with No Vehicle
1	149,230	10,747	7.20%
2	65,697	3,851	5.86%
3	265,201	12,352	4.66%
4	105,418	6,357	6.03%
Metro	1,264,187	91,625	7.25%
6	206,181	12,752	6.18%
7	115,457	6,336	5.49%
8	84,755	4,443	5.24%

Source: 2022 American Community Survey 5-Year Estimates

Table 24 shows the number of households with zero vehicles that may have a greater reliance on transit and walking and biking. An estimated 6.6%, or 148,463 Minnesota households, do not have a vehicle. Most households without a vehicle are in Metro District.

EQUITY ANALYSIS

Across the nation, EJ populations disproportionately bear transportation-related burdens. In Minnesota, Black and Indigenous people are more likely to be killed while walking and biking due to traffic-related crashes than other racial and ethnic groups.[64] Likewise, lower-income Minnesotans are more likely to be exposed to air pollution from vehicles because they are more likely to live near busy roads than people who are wealthier.[65]

Although MnDOT has been collecting data to identify these disparities for the state highway system, no equity analysis has been completed on the state's railway system. This analysis seeks to better understand the distribution of rail system benefits and burdens on EJ populations across Minnesota.

RESEARCH QUESTIONS

To identify topics for the equity analysis, MnDOT staff provided feedback at a State Rail Plan Equity meeting in August 2023 that identified possible ways railroads impact EJ populations differently, including safety, noise, pollution, passenger rail services, and statewide investments. This input identified key questions for the equity analysis:

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[64] MnDOT Statewide Pedestrian Safety Analysis Final Report 2021, www.mndot.gov/trafficeng/safety/reportspubl.html

[65] 2022 MnDOT Statewide Multimodal Transportation Plan, "Health Trend", www.minnesotago.org/

- Rail Burdens
  - Safety: Are rail crashes more likely to occur in EJ areas?
  - Pollution: Are EJ areas likely to have higher levels of diesel emissions from the rail system?
- Rail Benefits
  - Transit Access: Do EJ areas have equal access to Northstar and Amtrak passenger rail stations as compared to other areas?

METHODOLOGY

To answer these research questions, we conducted geographic analyses to understand how the benefits and burdens are distributed across EJ census tracts and other census tracts that are adjacent to or intersecting with the state rail system.

Disadvantaged Areas

Since applicants to Federal Rail Administration's (FRA) Justice40-covered grant programs are advised to use the Climate and Economic Justice Screening Tool (CEJST) to identify disadvantaged census tracts, we used CEJST to identify EJ areas for the equity analysis. CEJST was developed by the White House Council on Environmental Quality to identify disadvantaged communities as part of the Biden-Harris Administration's Justice40 Initiative. The tool's methodology uses a variety of demographic and socioeconomic datasets as indicators of burdens, which includes American Community Survey data like race/ethnicity, poverty level, and age, as well as other climate, environmental, and health burdens on communities from other data sources. So, while there is overlap with the EJ populations in Minnesota explored above, there are additional factors considered for the CEJST disadvantaged areas. For the equity analysis, we will refer to the CEJST communities as "disadvantaged areas" to clarify this distinction.

Geographic Analysis

To understand the distribution of benefits and burdens of the Minnesota rail system on disadvantaged areas compared to other areas, we first used GIS to layer CEJST census tracts on the statewide rail system to identify where census tracts intersect or are adjacent to rail infrastructure. We then overlaid geocoded data on burdens and benefits, from the following sources:

- Safety: 2019-2023 FRA Injury/Illness Summary – Casualty Data (Form 55A) for passenger on train, non-trespasser on rail property, trespasser, and non-trespasser off rail property types of crashes
- Pollution: 2023 National Air Toxics Assessment (NATA) Diesel particulate matter exposure, as complied by the EPA's EJScreen, and overlapped rail yards from the North American Rail Network Lines Bureau of Transportation Statistics as of March 2024.
- Transit Access: Amtrak and Northstar passenger rail stations as of March 2024.

We then calculated the percentage of benefits and burdens that occurred there, comparing it to the percentage of residents who live in the disadvantaged areas adjacent and intersecting with rail lines and the areas that are intersecting and adjacent to rail lines that are not disadvantaged.

FINDINGS

POPULATION

As described above in the methodology, we layered CEJST disadvantaged areas, which are census tracts that the Justice40 initiative identifies as either disadvantaged or non-disadvantaged, with a map of the statewide rail lines. This allowed us to identify census tracts that intersect with or are directly adjacent to rail lines. Because of their proximity to rail lines, people living in these census tracts are more likely to experience impacts from the state rail system.

TABLE 25. POPULATION NEAR RAIL LINES

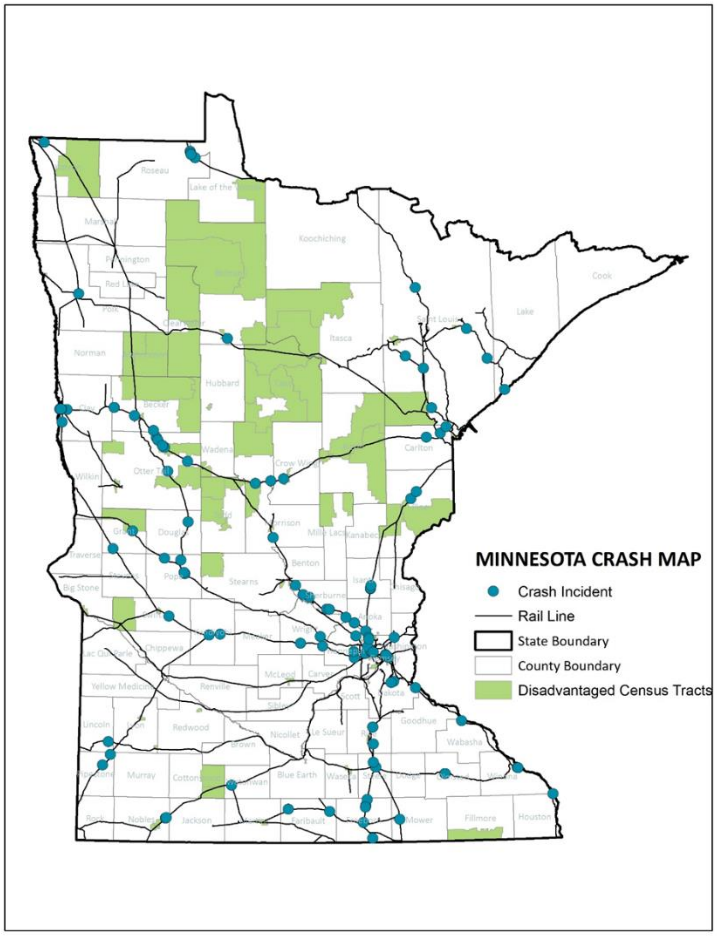
	Disadvantaged Area	Non-Disadvantaged Area	Minnesota (all)
Total Census Tracts	200	1,138	1,338
Total Population	716,657	4,846,721	5,563,378
Total Census Tracts Intersecting with Rail Line	106	605	711
Population Intersecting with Rail Line	386,256	2,578,410	2,964,666
Percent of Area Population Intersecting with Rail Line	53.90%	53.20%	53.29%

The data analysis found that 53.3 percent of Minnesotans live in census tracts intersecting with or directly adjacent to a rail line. **People living in disadvantaged areas are slightly more likely to live near a rail line than people from non-disadvantaged areas.** While 53.9 percent of people living in disadvantaged areas live near a rail line, 53.2% of people in non-disadvantaged areas live near a rail line.

SAFETY

To analyze rail crash rates in disadvantaged areas compared to non-disadvantaged areas, we mapped crashes involving someone from the general public from the 2019-2023 FRA Injury/Illness Summary – Casualty Data (Form 55A) and layered CEJST census tracks to identify if crashes occurred in disadvantaged or non-disadvantaged areas. Figure 56 shows crashes from 2019-2023 and the disadvantaged census tracts.

FIGURE 56. RAIL CRASHES FROM 2019-2023 IN MINNESOTA



We analyzed how crashes affected people living in disadvantaged and non-disadvantaged areas in Table 26.

TABLE 26. RAIL CRASHES BY AREA BETWEEN 2019-2023

Disadvantaged Area	Non-Disadvantaged Area	Minnesota (All)	Disadvantaged Area
Population Intersecting with Rail Line	386,256	2,578,410	2,964,666
Total Census Tracts with Crashes	13	72	85
Percent of Census Tracts with Crashes	15.29%	84.71%	N/A
Total Crashes by Area	21	95	116
Percent of Crashes by Area	18%	82%	N/A
Crash Rate by Area	0.00544%	0.00368%	0.00391%
Average crashes per tract	1.62	1.32	1.36
Average population per tract	29,712.00	35,811.25	34,878.42
Area residents per crash	18,393	27,141	25,557

Disadvantaged Area	Non-Disadvantaged Area	Minnesota (All)	Disadvantaged Area
Comparison to mean	-28%	6%	N/A

Between 2019 and 2023, there were 116 crashes. 21 crashes occurred in disadvantaged areas and 95 occurred in non-disadvantaged areas. Between 2019-2023, the crash rate per resident in disadvantaged areas adjacent to a rail line was 0.0054 percent; in non-disadvantaged areas adjacent to a rail line, the crash rate was 0.0037 percent. In relative terms, the crash rate is 47.6 percent higher in disadvantaged areas than in non-disadvantaged areas. **When correcting for population, people in disadvantaged areas are more likely than people in non-disadvantaged areas to live near a crash**. On average, disadvantaged areas also had 22.4 percent more crashes per tract than non-disadvantaged areas. Compared to the average crash rate by area throughout the state, those in disadvantaged areas are 28 percent more likely to live near a crash, and those in non-disadvantaged areas are 6 percent less likely to live near a crash. Although we don't know if the people involved in the crashes live in the area that the crash occurred in, there could be rail improvements that could make the community safer overall for residents and people who pass through. Also, because people from disadvantaged communities are less likely to own a car and more likely to rely on walking and biking, future analysis on rail crashes may want to look at the types of crashes (pedestrian vs car).

POLLUTION

Research has found that found that people living in close proximity to rail yards are more likely to be exposed to high rates of diesel particulate matter (PM) emissions from locomotives, trucks and yard equipment.[66] A census tract is considered diesel PM pollution burdened if the exposure of diesel PM in that area is above the 75th percentile nationwide. In Minnesota, only the Twin Cities metropolitan area has areas with diesel PM emissions above the 75th percentile nationwide. Figure 57 provides an overview of census tracts in the Metro District with high diesel PM emissions and the location of rail yards.

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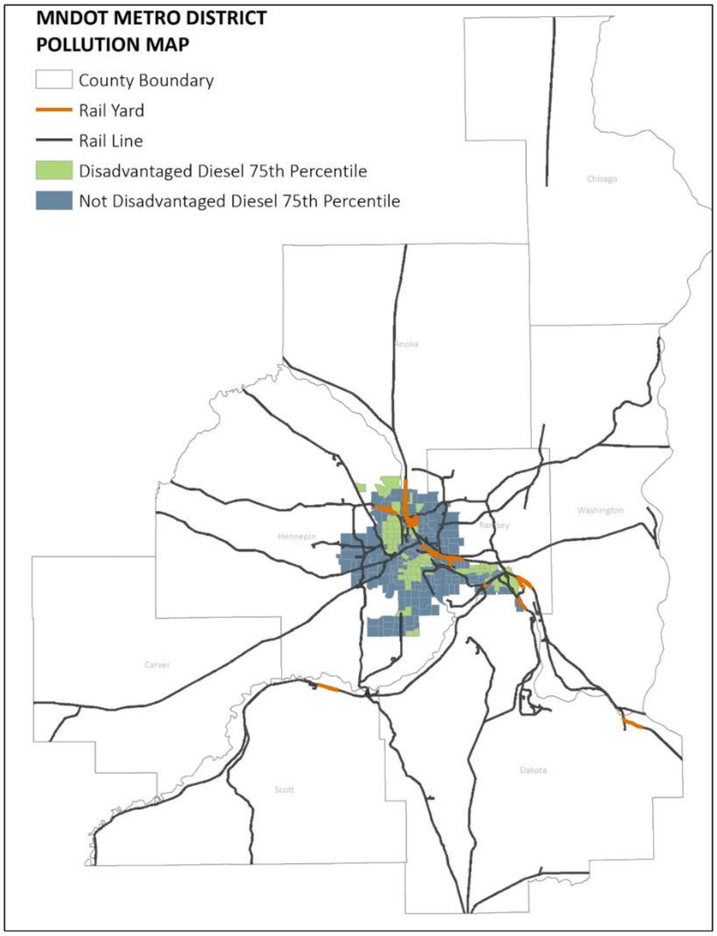
[66] Hricko, A., Rowland, G., Eckel, S., Logan, A., Taher, M., & Wilson, J. (2014). Global trade, local impacts: lessons from California on health impacts and environmental justice concerns for residents living near freight rail yards. International journal of environmental research and public health, 11(2), 1914–1941. https://doi.org/10.3390/ijerph110201914

FIGURE 57. DIESEL PM POLLUTION IN THE METRO DISTRICT



Diesel PM emissions result from fuel burned from any diesel engine. The census tracts highlighted in the map may not necessarily be polluted directly by or as a result of the rail transportation system. So for this analysis, we focused on the census tracts directly adjacent to rail yards, which is shown in Table 27.

TABLE 27. RAIL YARD PROXIMITY AND DIESEL PM BY AREA

	Disadvantaged Area	Non-Disadvantaged Area	Minnesota (all)
Total Population	716,657	4,846,721	5,563,378
Total Census Tracts Adjacent to Rail Yards	15	55	70
Population of Census Tracts Adjacent to Rail Yards	58,171	219,854	278,025
Percent of Area Population Living Adjacent to Rail Yards	8.12%	4.54%	5.00%
Total Census Tracts with Diesel PM above 75 Percentile	65	145	210
Population of Census Tracts with Diesel PM above 75 Percentile	215,826	510,455	726,281

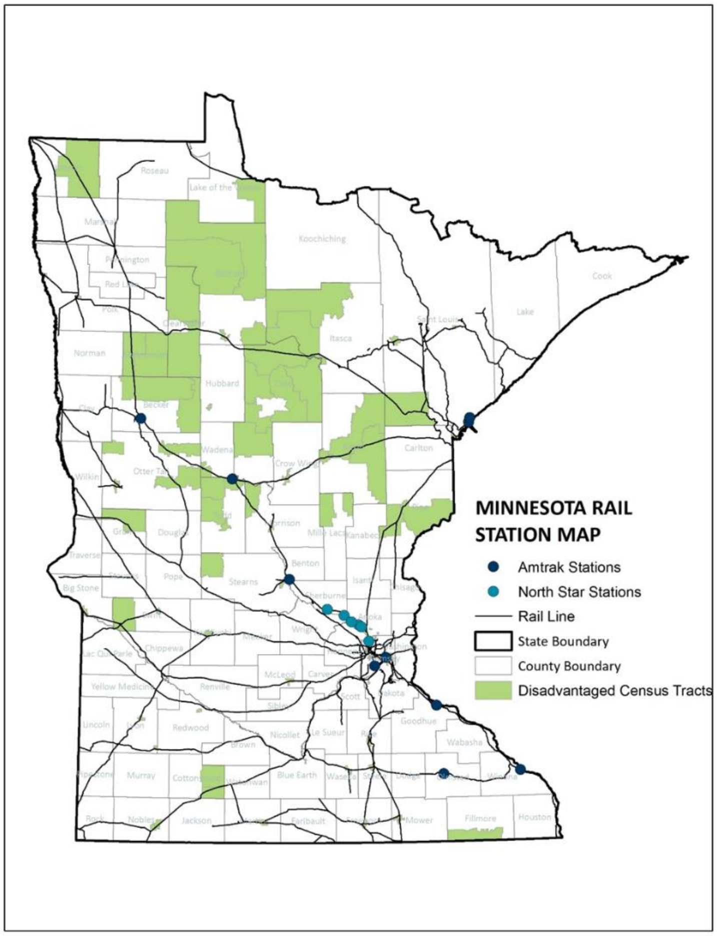
	Disadvantaged Area	Non-Disadvantaged Area	Minnesota (all)
Total Census Tracts Adjacent to Rail Yard with Diesel PM above 75 Percentile	2	16	18
Population of Census Tracts Adjacent to Rail Yard with Diesel PM above 75 Percentile	16,712	57,653	74,365
Percent of Area Population Adjacent to Rail Yard with Diesel PM above 75 Percentile	28.73%	26.22%	26.75%

The data analysis found that 5 percent of Minnesotans live in census tracts directly adjacent to a rail yard and 1.3% of Minnesotans live adjacent to a rail yard and live in areas with diesel PM emissions above the 75th percentile nationwide. People living in disadvantaged areas are more likely to live near rail yards (8.1%) than people from non-disadvantaged areas (4.5%). **Disadvantaged census tracts near rail yards are more likely to have high diesel PM pollution than non-disadvantaged census tracts.** While 28.7 percent of people in disadvantaged areas near a rail yard live in a census tract with diesel PM above 75th percentile, 26.2 percent of people in non-disadvantaged areas near a rail yard live in a census tract with high levels of diesel PM pollution.

PASSENGER RAIL ACCESS

Public transit provides a means of transportation for people who do not have access to a personal vehicle or who are unable to drive due to age, disability, or other reasons. It provides an important service to ensure all people can access economic opportunities, education, healthcare, and other services regardless of their income level, age, or ability. Passenger rail service, including Northstar and Amtrak service, is a crucial benefit of the Minnesota rail system. Figure 58. Passenger Rail Stations in Minnesota highlights the passenger rail station locations in Minnesota.

FIGURE 58. PASSENGER RAIL STATIONS IN MINNESOTA



For this analysis, we looked at access to passenger rail stations for disadvantaged and non-disadvantaged areas. Any census tract that touches a passenger rail station is considered to be an area with access to passenger rail.

TABLE 28. PASSENGER RAIL ACCESS BY AREA

	Disadvantaged Area	Non-Disadvantaged Area	Minnesota (all)
Population Intersecting with Rail Line	386,256	2,578,410	2,964,666
Number of Census Tracts Intersecting with Northstar Stations	59	128	187
Number of Census Tracts Intersecting with Amtrak Stations	4	6	10
Population Intersecting with Northstar Stations	231,507	573,114	804,621
Population Intersecting with Amtrak Stations	10,138	29,527	39,665
Percent of Area Population Intersecting with a Northstar Station	32.30%	11.82%	14.46%
Percent of Area Population Intersecting with an Amtrak Station	1.41%	0.61%	0.71%

	Disadvantaged Area	Non-Disadvantaged Area	Minnesota (all)
Percent of Area Population Intersecting with a Passenger Rail Station	33.72%	12.43%	15.18%

The data found that 28.5% of Minnesotans who live along a rail line also live near a passenger rail station. Fifty-nine point nine percent of people living in disadvantaged areas along a rail line live near a Northstar station compared to 22.2% of people living in non-disadvantaged areas. There is a somewhat similar likelihood of living near an Amtrak station if you live in a disadvantaged area (2.6%) or non-disadvantaged area (1.2%). **Overall, if you live in a disadvantaged area in Minnesota, you are more likely to live in close proximity to a passenger rail station than people from non-disadvantaged areas.**

LIMITATIONS AND ADDITIONAL RESEARCH

This rail equity analysis is the first of its kind by MnDOT. There will be opportunities for MnDOT and partners to expand or improve upon this research in the future. The limitations of this analysis include:

- Census tracts: Using census tracts to identify disadvantaged areas in our geographic analysis is potentially limiting. The size and shape of census tracts varies across the state. In rural areas, census tracts tend to be geographically larger and in urban areas they tend to be smaller. In areas where the census tract is geographically larger, there many be locations in the community where they do not experience impacts from the rail line intersecting with the tract, but in areas with smaller census tracts, the tracts not immediately adjacent may also experience impacts because of their proximity to the rail lines.

- Pollution data: The pollution data from this analysis used census tracts that have diesel PM emissions above the 75th percentile nationwide. Minnesota tends to have lower diesel PM emissions than national trends, so few census tracts were highlighted for being above the 75th percentile of emissions nationwide. Future analysis may want to look at diesel PM emission above the 75th percentile statewide to get a better understanding of emissions occurring near rail yards in Greater Minnesota.

The opportunities to delve deeper into equity and the state rail system:

- Crash analysis: Data pulled from the FRA Injury/Illness Summary – Casualty Data (Form 55A) for the safety analysis has some, but somewhat inconsistent, detailed information on crashes. More analysis could be done to look at the severity of crashes (e.g. fatality or injury), who was involved in the crash (e.g. a pedestrian or driver), and the reason for the crash (e.g. vehicle stalled at crossing). Future safety analyses could further explore the types of crashes occurring in disadvantaged areas compared to non-disadvantaged areas.

- Noise analysis: We requested more detailed location information on Quiet Zones from FRA, but did not receive a response in time for this analysis. Quiet zones are segments of a rail line where train engineers do not need to sound their horns when approaching crossings, which they are otherwise required by FRA to do. The process to create a quiet zone is typically spurred by residents complaining to their City or County about noise. The municipality funds crossing safety improvements and/or crossing closures to compensate for not having the train horn warning and files to establish a quiet zone with the FRA. As of 2022, there were a total of 84 quiet zones in Minnesota, which is the state with the third most quiet zones in the nation following Texas (181) and Wisconsin (92). Because of the significant cost of improvements for a community to establish a quiet zone and the fact that EJ populations may be less likely than white and higher income people to make a complaint to their local agency about noise, more analysis should be done in the future to understand the distribution of noise pollution from the rail system across the state.

- Rail investments analysis: Transportation equity means that the burdens and benefits of transportation systems, services and spending are fair and just. Looking at past MnDOT rail investments, and if those projects occurred in disadvantaged areas or non-disadvantaged areas, could help identify how transportation benefits have been distributed in past, as well as inform future project criteria and prioritization for MnDOT's Railway-Highway Crossings (Section 130) Program and Minnesota Rail Service Improvement (MRSI) Program.

- Other data analysis tools: The USDOT released new equity tools in 2023 to understand transportation-specific impacts to communities, including the Justice40 Rail Explorer and USDOT Equitable Transportation Community Explorer. These tools look at how a community or project area is experiencing disadvantage related to a lack of transportation investments and opportunities and may be used for more project-specific equity analyses by MnDOT and partners.

ENVIRONMENTAL JUSTICE AND TRANSPORTATION EQUITY PLAN STRATEGIES

Minnesota continues to grow more diverse, but economic and social disparities continue to persist. It is important that as Minnesota looks to the future, the transportation system adapts to changing needs and addresses systemic disparities.

Transportation equity means that the burdens and benefits of transportation systems, services and spending are fair and just, and transforming transportation systems will require ongoing listening, learning, changing, implementing, and adapting. The following strategies provide a system-level approach to advance transportation equity, avoid and minimize negative impacts on EJ populations, and encourage the full and fair participation of EJ populations in decision-making processes related to the statewide rail system.

COMMUNITY ENGAGEMENT

- Continue to identify and learn about the communities affected by the statewide rail system.

- Create opportunities for impacted communities to inform rail policy and process decision-making through public engagement activities.

- Use equitable engagement practices to ensure EJ populations and communities most burdened by the rail system can participate in engagement activities (e.g. provide in-person and online engagement opportunities, translate communications materials, etc.).

- Inform communities how rail decision-making processes work and how their feedback influences policies, processes, and projects.

- Close the communication loop after engagement activities and report back to community members on how their feedback was used or considered in decision-making.

- Share with communities how MnDOT is working to advance transportation equity in the rail system to improve accountability and transparency.

COLLABORATIVE PARTNERSHIPS AND STAKEHOLDER ENGAGEMENT

- Foster relationships with community organizations that serve people from EJ populations and disadvantaged areas.
- Collaborate with community organizations on public engagement opportunities to reach EJ populations and disadvantaged areas.
- Discuss the results of the equity analysis with rail authorities, local governments, tribal nations, and community organizations, which could provide valuable context and future directions for rail equity work.
- Collaborate with rail authorities, local governments, tribal nations, and community organizations to avoid, minimize and mitigate impacts of the rail transportation system on EJ populations.
- As the opportunity arises, facilitate dialogue and collaboration between rail authorities, local governments, tribal nations, and community organizations to create solutions that address rail burdens.

DATA ANALYSIS

- Continue to analyze the impacts of the statewide rail system on EJ populations and disadvantaged areas both quantitatively and qualitatively.
- Establish processes or mechanisms for ongoing monitoring of rail impacts.
- Consider conducting the additional rail equity research proposed in the equity analysis.

INVESTMENTS AND PROJECT PRIORITIZATION

- Ensure that state investments in rail projects are equitably distributed among all communities, including EJ populations and disadvantaged areas.
- Include equity criteria in MnDOT’s prioritization framework for projects applying for rail funding to support a fair and just distribution of investments.
- Use a disadvantaged area criterion to rank or score rail projects that apply for state funding to target resources in communities most likely to be affected by rail burdens.

PERFORMANCE METRICS AND ACCOUNTABILITY

- Establish clear goals, objectives, and performance metrics for the statewide rail system related to transportation equity, environmental justice, and community engagement.
- Monitor and evaluate progress towards achieving rail equity goals regularly.
- Continue to document how transportation equity is integrated into MnDOT rail policies, plans, and projects to support transparency, accountability, and learning.
- Continue to document how rail plans and projects are aiming to avoid, minimize, and mitigate negative impacts of the statewide rail system on EJ populations and disadvantaged areas.

APPENDIX B: CLASS I RAILROAD PROFILES

Class I railroads have annual revenues greater than $1 billion and connect Minnesota to other areas of the North American continent.[67] Four Class I railroads operate in Minnesota: BNSF Railway (BNSF), Canadian National Railway (CN), CPKC, and Union Pacific (UP). Each of these major railroads has operations of varying complexity in Minnesota, as evidenced by the varying route miles have in the state, and their total system mileage, as shown in the table below. Some railroads do not operate all of the rail miles that they own in Minnesota but lease trackage to other railroads. Additionally, Class I railroads may operate onother railroads' tracks, referred to as "trackage rights".

TABLE 29: SUMMARY OF CLASS I MILEAGE IN MINNESOTA

Operator Name	Total Route Miles (U.S., Canada, and Mexico)	Miles Owned/Operated in MN	Miles Owned/ Not Operated in MN	Miles Accessed by Trackage Rights in MN
BNSF	32,500	1,480	9	222
CN	18,800	378		
CPKC	28,046	1,021	111	570
UP	32,452	402	16	226
Total	**111,798**	**3,281**	**136**	**1,018**

Source: Class I R-1 Annual Reports with STB, 2023

Similarly, each of these major railroads has a different footprint across North America: BNSF and UP primarily cover the western half of the United States. At the same time, CN and CPKC span the full width of Canada from the Pacific Ocean to the Atlantic Ocean, with lines extending north to south through the middle of the United States. Additionally, these major railroads are important in enabling Minnesota's businesses to connect to the rest of North America; BNSF, CN, and CPKC all provide connections to Canada, while CPKC and UP provide connections to Mexico. Summaries of each of these four railroads are provided below.

BNSF RAILWAY (BNSF)

BNSF operates over 32,500 miles of rail track in 28 of the 50 United States and three Canadian provinces. BNSF is headquartered in Fort Worth, Texas, and is the largest railroad system in the United States by revenue, employed personnel, and track miles, employing about 37,000 people, with 27 major intermodal facilities, and operates an average of 1,200 trains per day.[68]

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[67] Surface Transportation Board. Revenue thresholds as of 2022, accessed April 2, 2024. https://www.stb.gov/reports-data/economic-data/

In addition to being the largest Class I railroad in the U.S., BNSF operates more mileage in Minnesota than other railroads. In Minnesota, BNSF supports a wide range of industries, hauling agricultural, consumer, and industrial products across their network, including grain, fresh produce, coal, and wood products.[69]

NEW PROJECTS

Since the last update of the Minnesota rail plan, BNSF has undertaken significant capital investment projects aimed at enhancing rail infrastructure in Minnesota. A new grain shuttle facility was completed in Ulen, facilitating the movement of 63 million tons of grain in 2021. BNSF has indicated that the early success and growth potential of this type of facility may drive increased investments in new facilities across Minnesota.

Another major project since the completion of the prior rail plan was the construction of the Willmar Wye, which was undertaken as a public-private partnership between BNSF, MnDOT, the City of Willmar, and Kandiyohi County. This project was completed in October 2022 and included the construction of a new BNSF rail line to provide a new link between the Morris and Marshall subdivisions and reduce rail traffic in downtown Willmar. The project also included the realignment of two highways, the creation of two new bridges, and the creation of a new rail-served industrial park on the west side of Willmar. The project was funded by a combination of BNSF, MnDOT, county, and city dollars in addition to $10 million in USDOT grants.

FUTURE IMPROVEMENTS

Similar to challenges in urban areas in other states, the limited availability of industrial property poses challenges for providing rail service around the Twin Cities metro area. BNSF has indicated that there is increasing demand from customers for rail services that are located close to metropolitan areas. However, due to the increasing scarcity of industrial areas, BNSF operates facilities 60 to 90 miles away from the cities, primarily in the northern suburbs and far-western exurbs.

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[68] BNSF Railway. As of 2024, accessed March 2024. https://www.bnsf.com/?portal=Employee

[69] BNSF Railway. "BNSF Fact Sheet." As of March 2024, accessed March 2024. https://www.bnsf.com/bnsf-resources/pdf/about-bnsf/fact_sheet.pdf.

FIGURE 59. BNSF RAILWAY SUBDIVISIONS

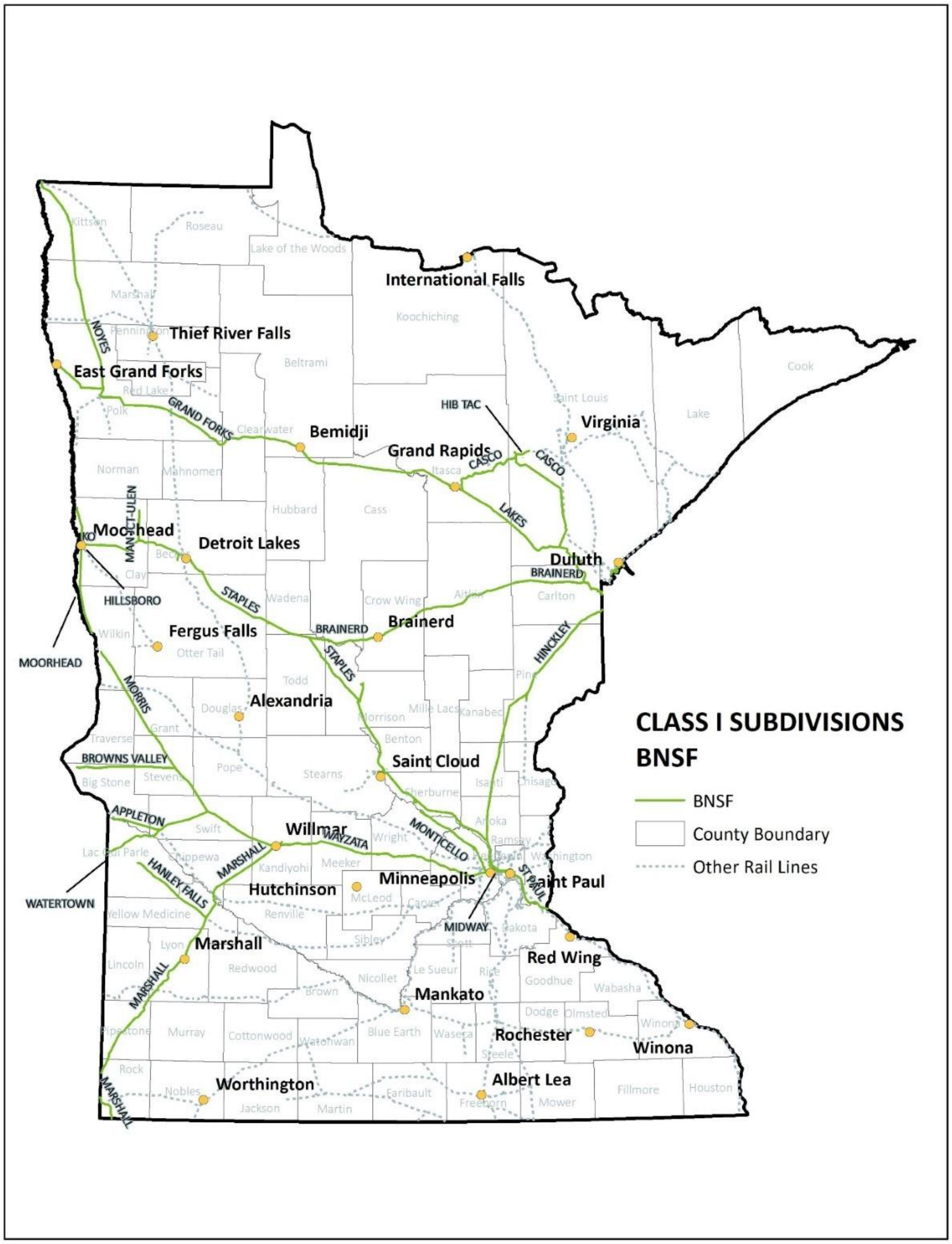

TABLE 30. BNSF RAILWAY SUBDIVISIONS IN MINNESOTA

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
Great Lakes Division							
St. Paul	St. Paul (0.2 mi west of Warner Rd)/St. Paul (0.2 mi east of Warner Rd)	1	CTC		<1		AMTK, CPRS, TCWR
Lakes Division							
Casco	Taconite (1.1 mi north of CR 13)/Taconite (0.6 mi south of CR 13)	1			2		CN
Southern Division							
Moorhead	Minnesota-North Dakota state line/ Breckenridge Twp	1	CTC		3		RL, RRVW
System Division							
Midway	St. Paul (U of MN Transit Way)/St. Paul (0.04 mi west of U of MN Transit Way)	2			<1		AMTK, CPRS, MNNR, MNRX, TCWR, UP
Twin Cities Division							
Appleton	Benson/State Line	1	TWC	40	44		TCWR
Brainerd	Chub Lake/ Stapes	1	TWC	49	120		
Browns Valley	Alberta/Barry	1	TWC	25	31		
Casco	Brooktson/ Braxton Jct.	1	CTC	50	70		CN
Grand Forks	Cass Lake/East Grand Forks	1	TWC	49	131		CPRS, MNN
Hanley Falls	Hazel Run/Madison	1	TWC	25	28		
Hib Tac	KY Junction/ Mahonning	1	TWC	20	3		CN
Hillsboro	OTV Junction/ Moorhead Jct	1	CTC	49	2		AMTK
Hinckley	Foxboro/ Coon Creek	1	TWC ABS	50	113	Between Boylston and Coon Creek, taconite loads up to 272K	CPRS, UP
KO	East Dillworth/ Moorhead Jct.	2	ABS	60	9	Hannaford to Walum: 268K	AMTK, OTVR

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
Lakes	Chub Lake/Cass Lake	1	CTC (MP 34.0 – MP 108.5: Chub Lake – Gunn) TWC (MP 108.5 – MP 164.9: Grand Rapids – Cass Lake)	50	131	Between Superior and Saunders, taconite loads up to 272K	CPRS, CTRR
Marshall	Ihlen/Willmar	1	TWC	49	112		
Midway	Seventh St./ University	1 (Intermodal Terminal; UM Transit Way – Hennepin 2 Ave.; Harrison – Broadway: 8 total miles) 2 elsewhere	CTC	45	11		AMTK, CPRS, MNNR, MNRX, TCWR, UP
Monticello	Lyndale Jct./ Rogers	1	TWC	25	21		CPRS, UP
Moorhead	Kent/OTV Junction	1	TWC ABS	60	40		
Morris	CP 98/CP 212	1	CTC	40	104	MP 7.2 – MP 40.0: 268K	RL, RRVW
Noyes	CP 839/Noyes	1	TWC	35	91		CPRS
Staples	University/East Dilworth	1 (Little Falls – Pillbrook; Sherburne Co. Rd. 43NW – 125th Ave. SE) 2 elsewhere	CTC TWC ABS	79	239		AMTK, CPRS, MNRX, UP
St. Paul	St. Croix/ University	2 (Western terminus – I-35E; 10 miles) 1 elsewhere	CTC	70	28		AMTK, CPRS, MNNR, MNRX, TCWR, UP

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
Watertown	Appleton/ Nassau	1	TWC	40	25		
Wayzata	Rollins Avenue/CP 98	1	CTC	60	89		CPRS, MNRX, TCWR, UP

CANADIAN NATIONAL RAILWAY (CN)

CN operates 18,800 miles of track and has a network that spans the full width of Canada from the western to eastern coasts. In the United States, CN owns the lines of the former Illinois Central Railroad, which spanned from Chicago to the Gulf of Mexico. CN is headquartered in Montreal, Quebec, and has U.S. headquarters in the Chicago area. CN is Canada's largest railway system by revenue generation and network mileage, and employed approximately 22,000 people in 2023, with over 500 employees in Minnesota.

In Minnesota, CN's geographic coverage is limited to the northeast portions of Minnesota. Within the state, CN plays an important role in moving iron ore from the Iron Range to port facilities in Duluth and Two Harbors, and it also serves as an intermodal facility in Duluth. CN's mainline that connects West Coast ports to Chicago passes through Minnesota.

NEW PROJECTS

Since the completion of the prior state rail plan, CN has invested in its network in Minnesota, among the largest being an expansion of double-track sections and geometric adjustments to its mainline on Steelton Hill in Duluth. These improvements addressed steep grades and traffic bottlenecks created by the hill, and improved safety and efficiency of the overall CN network between Winnipeg and Chicago.

Since the completion of Steelton Hill improvements, CN has undertaken additional projects in Minnesota, including the creation of new tracks at its iron ore handling facilities in Two Harbors, which will improve the safety and efficiency of iron ore train operations in and around the Two Harbors Area.

FIGURE 60. CANADIAN NATIONAL RAILWAY SUBDIVISIONS

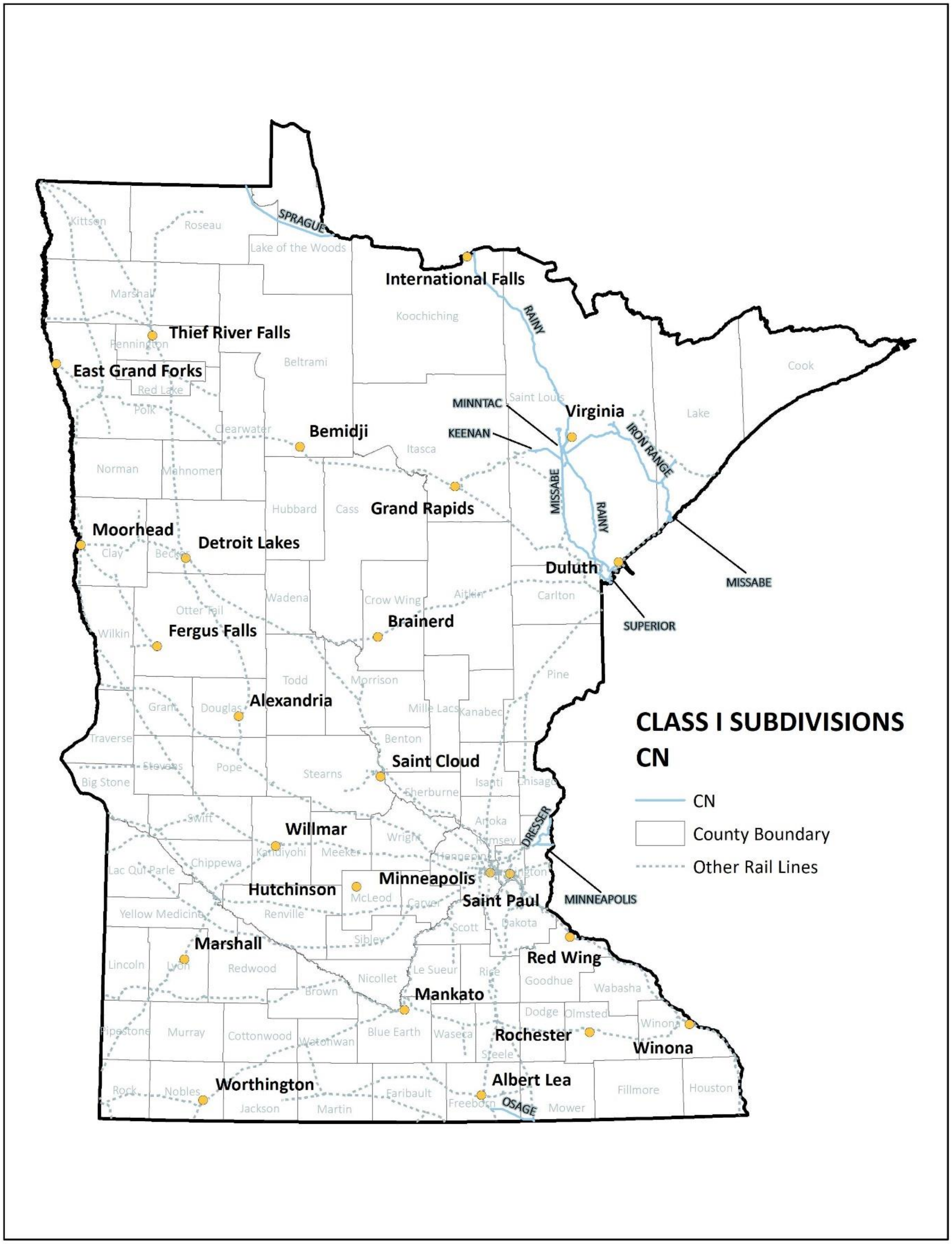

TABLE 31. CANADIAN NATIONAL RAILWAY SUBDIVISIONS IN MINNESOTA

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
Iowa Division							
Osage	Glenville/Lyle	1	MAN		19		
Lakehead Division							
Sprague	Baudette/ International Boundary	1	CTC	60	44		
Lakes Division							
Dresser	Withrow/Marine	1	TA	25	9	268K	CPRS
Hinsdale Spur	Hinsdale/ Wyman	1			7		
Iron Range	Iron Jct./Two Harbors	1	CTC	40	74	At Wales Spur, the heaviest 4-axle car permitted is 263,000 lbs.	
Keenan	Emmert/Keenan	1	TA (MP 15.3 – 8.2); Rule 520 (MP 8.2 – 2.0); CTC (MP 2.0 – 0.0)	25	15		BNSF
Minneapolis	Withrow/Minnesota-Wisconsin state line	1	TA	40	7		
MinnTac	South MinnTac/ Wolf	1	CTC	40	8		PVTX
Missabe	Largo/Duluth Docks	2 for 7.6 mi 1 for 61.3 mi	CTC	60	68		BNSF
Rainy	Duluth Jct./ Nopeming Jct.	1	CTC	55	156		BNSF, MDW
Superior	Proctor Jct./South Pokegama	1	CTC	60	16	180K for ore cars	BNSF
Syl Laskin Lead	Colby (0.4 mi west of Township Rd. 6401)/Colby (0.6 mi east of Township Rd. 6401)	1			1		
Thunderbird Mine Lead	Mountain Iron (1 mi south of CR 372)/	1			2		

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
	Mountain Iron (1 mi north of CR 372)						
Two Harbors	Waldo/Two Harbors	1	TA	20	5		
United Taconite Spur	McDavitt/ Makinen	1			4		

FUTURE IMPROVEMENTS

In addition to local projects, CN is in the process of making investments to improve its bridges and international border crossing in Ranier, which will further improve the efficiency of train movements between Chicago and Winnipeg.

Outside of Minnesota, CN is currently exploring the potential creation of a new consolidated intermodal container yard in the southwestern suburbs of Chicago, which would further increase the capacity of their network, and may result in further train traffic being routed through CN's network in Minnesota.

CPKC

CPKC is a newly created (2023) railroad formed from the merger of the Canadian Pacific (CP) and Kansas City Southern (KCS) railroad companies. This merger created a network of over 20,000 miles of track across Canada, the United States, and Mexico. With the merger, CPKC has become the only single consolidated rail network that directly connects Canada, the United States, and Mexico. Before the merger, CP and KCS were the two smallest Class I railroads. The merger has resulted in new connections between cities, including a direct route from the Midwest to the border of Southern Texas in Laredo. CPKC's expanded network is likely to alter the railroad business landscape in North America.

CPKC's global headquarters are located in Calgary, with U.S. headquarters in Kansas City, Missouri. The railroad employs about 20,000 people. In Minnesota, CPKC's top markets are grain, energy, chemicals, and plastics, as well as metals and fertilizers.[70]

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[70] Canadian Pacific Kansas City. "CPKC Annual Report 2023." As of December 2023, Accessed April, 2024. https://s21.q4cdn.com/736796105/files/doc_financials/2023/ar/cpkc-annualreport2023-final.pdf

FIGURE 61. CPKC SUBDIVISIONS

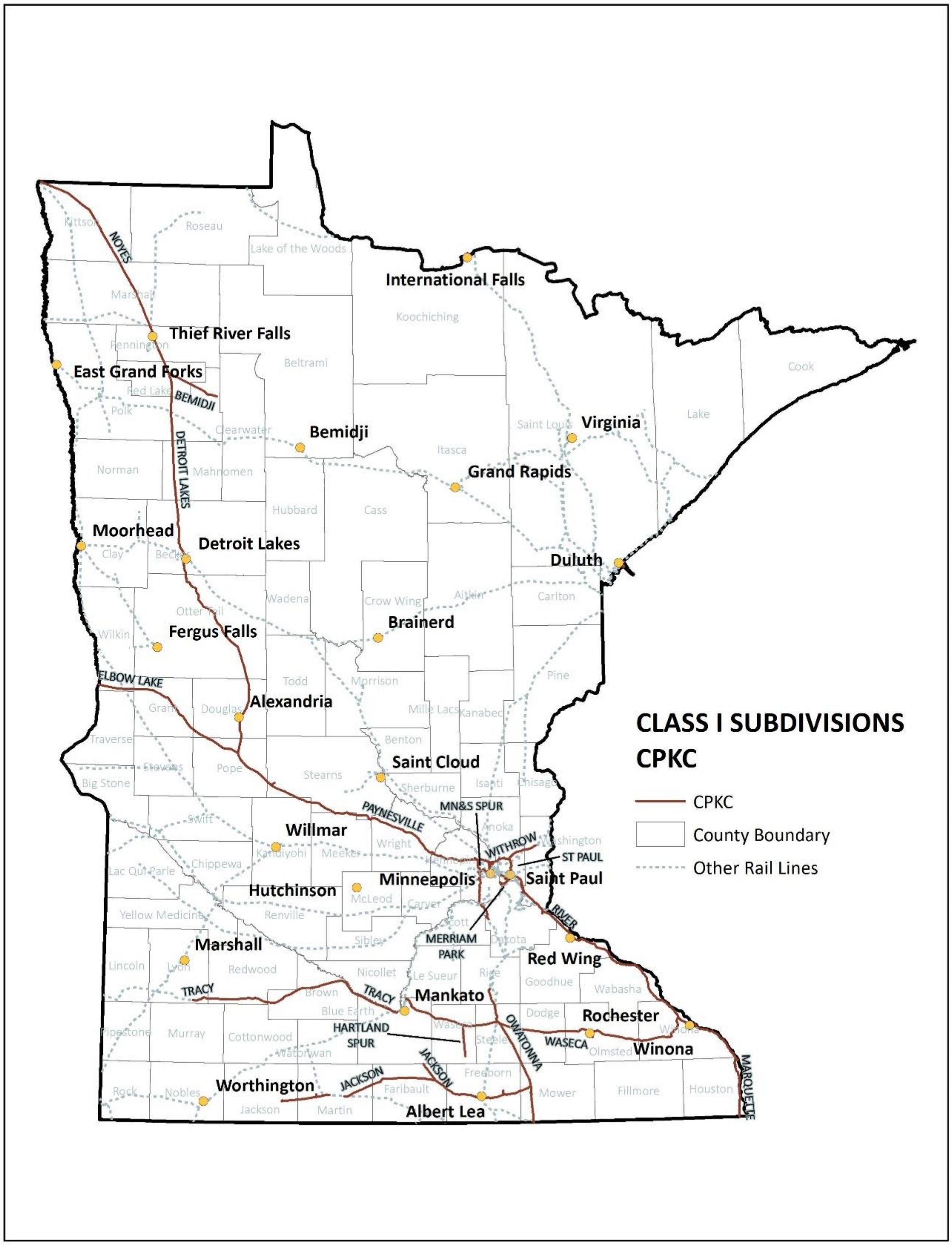

TABLE 32. CPKC SUBDIVISIONS IN MINNESOTA

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
East Division							
Bemidji	Gully/Plummer	1	TWC	10	22		
Detroit Lakes	Glenwood West/Thief River Falls North	1	TWC	49	188		
Elbow Lake	Glenwood/Tenney	1	CTC	60	64		RL, RRVW
Ford Line Spur	Saint Paul (Emma St.)/ Saint Paul (Cleveland Ave.)	1			5		
Hartland Spur	Waseca/Hartland	1	GCOR 6.28	10	19	263K	
Jackson	Ramsey/Jackson	1	TWC	40	107		
Marquette	New Albin/Bluff	1	TWC	40	23		
Merriam Park	St Paul Yard/Midway	1	CTC	70	9		AMTK, BNSF, MNNR, TCWR, UP
MN&S Spur	Auto Club/MN&S Jct	1	BRT	15	19		TCWR
Noyes	Thief River Falls North/Noyes	1	TWC	40	77		BNSF, MNN, NPR
Owatonna	Lyle/Comus	1	TWC	40	66		
Paynesville	BN University/ Glenwood East	1	CTC	60	119		CN, TCWR
River	River Jct West/St Paul Yard	1	CTC	79	119		AMTK, BNSF, UP
St Paul	Soo Jct/Cardigan Jct West	1	CTC	25	6		
Tomah	Mississippi Drawbridge/River Jct West	1	CTC	79	4		AMTK, UP
Tracy	Waseca/Tracy West	1	TWC	40	129		RCPE
Waseca	Goodview/ Waseca	1	TWC	40	98		
Withrow	Withrow/Shoreham	1	CTC	40	21		CN

NEW PROJECTS

Since the completion of the last Minnesota State Rail Plan, CP made significant investments in Minnesota to improve capacity on its lines in Minnesota, including upgrades to support Positive Train Control and Centralized Traffic Control operations, and the creation of new double-track sections of track and new passing sidings.

FUTURE IMPROVEMENTS

CPKC's merger has created a greater need for new strategic investments. Since the merger, $346 million has been dedicated to increasing the capacity along the network's North-South corridor including 26 specific locations where enhancements include constructing double tracks, new sidings, or extending existing sidings.[71]

CPKC plans to initiate intermodal service connecting former CP and KCS locations, facilitating a link between Mexico and Texas with the Midwest and Canada. CPKC facilities in the Chicago area are planned to become a pivotal hub for intermodal traffic traveling between Eastern Canada, Detroit, Kansas City, the Dallas region, and various destinations in Mexico. Specific to Minnesota, the former CP terminal in Minneapolis will serve as a key node for intermodal shipments originating from Western Canada and the Upper Midwest, destined for points along the former KCS and KCS de Mexico networks. New daily train routes are also planned, including new intermodal and manifest train routes between Minneapolis and Toluca, Mexico.

CPKC also has plans to expand its locomotive fleet, the current growth plans allow for the storage of 135 locomotives. However, by the end of the third year of the plan, the railroad will be utilizing the 135 in storage and have an estimated need for an additional 14 locomotives. CPKC also has plans to be carbon neutral. These plans include utilizing hydrogen fuel cells and batteries to create the first North American hydrogen-run locomotive fleet.[72]

UNION PACIFIC RAILROAD (UP)

UP is the second-largest railroad in North America by revenue and number of employees, very closely following BNSF in all categories. UP has a rail network of just over 32,000 miles across 23 states and is headquartered in Omaha, Nebraska. This large railroad employs over 31,000 people and operates about 7,300 locomotives.

In Minnesota, UP operates two main rail corridors along the state's southern border. UP top outbound commodities from Minnesota include grain, meals and oils, biofuels, sweeteners, petroleum coke, and other petroleum products. UP's top terminating commodities in Minnesota are coal, fertilizer, intermodal wholesale products, non-metallic minerals, and industrial chemicals. UP's originating volume from Minnesota is higher than its terminating volume. UP's 312 Minnesota employees handled 96,000 outbound cars and 31,000 inbound cars in 2022.[73]

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[71] Trains News Wire. "CP and KCS Project Dramatic Rise in Daily Train Counts." Trains.com. November 2, 2021.

[72] CPKC. "CPKC delivers strong fourth-quarter results." CPKC, As of January 2024, Accessed April 2024, https://www.cpkcr.com/en/media/CPKC-delivers-strong-fourth-quarter-results

[73] Union Pacific Railroad. "U.S. Railroad Guide.", As of 2022, Accessed March, 2024. https://www.up.com/aboutup/usguide/index.htm.

FIGURE 62. UNION PACIFIC RAILROAD SUBDIVISIONS

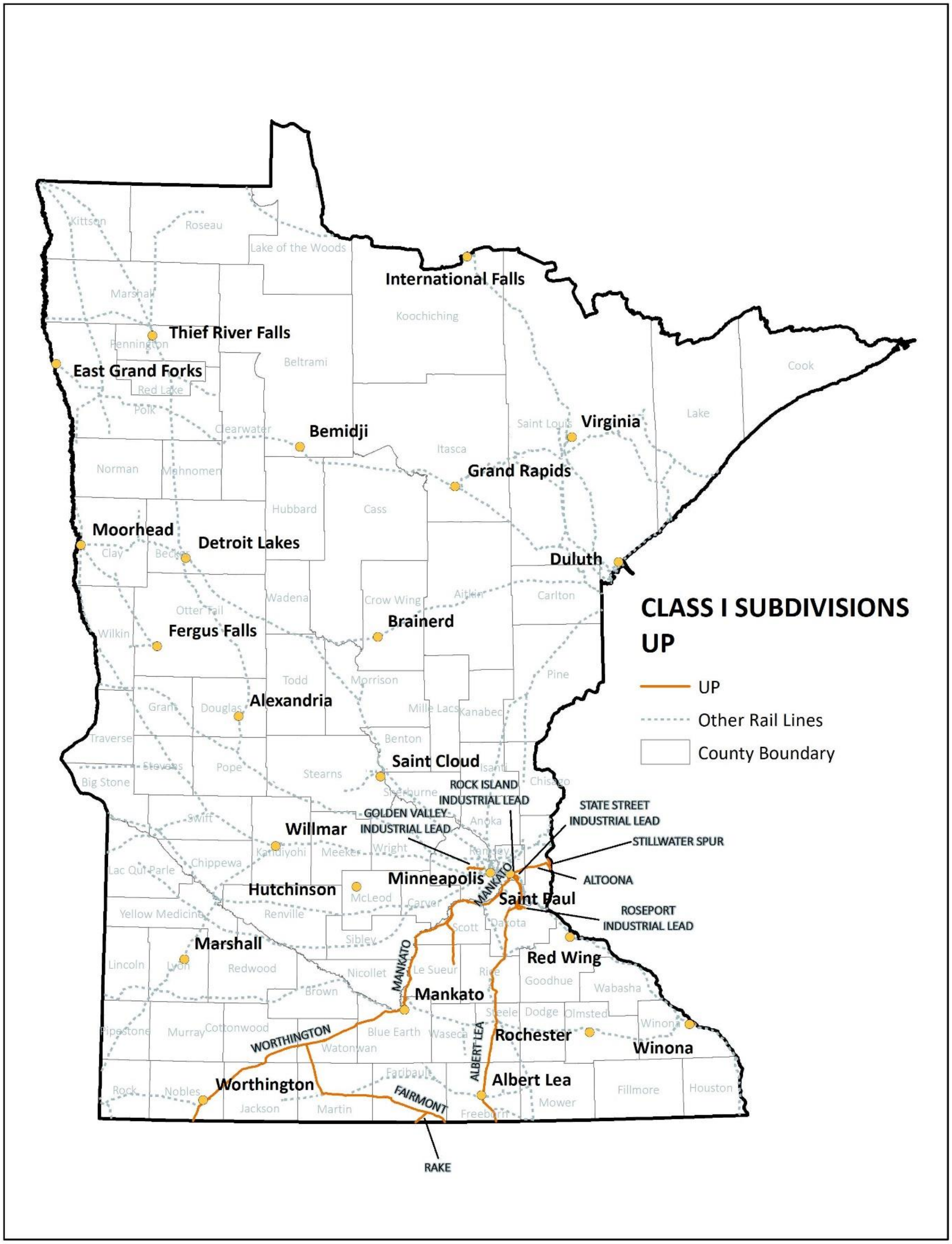

TABLE 33. UP SUBDIVISIONS IN MINNESOTA

Subdivision	From/to	Tracks	Signal	Maximum Speed in MPH (instead of FRA Track Class)	Miles in Minnesota	Height or Weight Restrictions	Other Railroad Trackage Rights
Great Lakes Division							
Albert Lea	Saint Paul/ Minnesota-Iowa state line	1	CTC		112		AMTK, CN, CPRS, PGR
Altoona	Saint Paul/Minnesota-Wisconsin state line	1 and 2	MAN (Lake Elmo – St. Croix River; about 7 miles) ABS elsewhere		18		MNNR
Fairmont	Minnesota-Iowa state line/ Butterfield	1			75		CPRS
Golden Valley Industrial Lead	Golden Valley/ Plymouth	1			4		
Mankato	Saint Paul/Saint James	1	ABS, MAN		118		CPRS, RCPE
Rake	Bricelyn/ Minnesota-Iowa state line	1	MAN		6		
Rock Island Industrial Lead	Saint Paul (Lafayette Fwy)/ Saint Paul (Andrew St)	1			2		
Roseport Industrial Lead	Inver Grove Heights/ Rosemount	1	CTC		13		CPRS
State Street Industrial Lead	Saint Paul/ South Saint Paul	1			4		
Stillwater Spur	Stillwater/West Lakeland Twp	1			5		MNNR
Worthington	Saint Paul/ Minnesota-Iowa state line	1			66		MSWY
Iowa Division							
Osage	Glenville/ Freeman Twp	1	MAN		<1		CN

NEW PROJECTS

Since the last Minnesota state rail plan update, UP has made significant investments in Minnesota. In particular, the railroad opened a new intermodal terminal in Minneapolis, which provides domestic service between the Twin Cities and Los Angeles, providing businesses with shipping options to and from the West coast.

FUTURE IMPROVEMENTS

UP has allocated $3.4 billion for 2024 capital improvements. UP also stated in their annual ‘Building America’ 2022 report their alignment with the United Nation’s Sustainable Development Goals (SDGs). Their goals include diversifying their workforce and net neutral emissions by 2050.

APPENDIX C: SHORT LINE AND REGIONAL RAILROAD PROFILES

TABLE 34. SUMMARY OF SHORT LINE AND REGIONAL RAILROADS IN MINNESOTA

Railroad Abbreviation/Name	Headquarters Location	Mileage Owned/Leased	Mileage Trackage Rights	Mileage out of Service	FRA Track Class	Weight Restrictions
BRRRA/Buffalo Ridge Regional Rail Authority	Luverne, MN	42	N/A	N/A	Not Reported	263k
CTRR/Cloquet Terminal Railroad	Cloquet, MN	2.5	0	0	2 miles class 2 and above	None
MNNR/Minnesota Commercial Railway	St. Paul, MN	86	0	Not Reported	63 miles class 1 23 miles excepted	286k
MDW/Minnesota, Dakota & Western Railway	International Falls, MN	2.3	182	N/A	Class 1	None
MNN & SCXY/KBN Inc (Minnesota Northern & St. Croix Valley Railroads)	Crookston MN	165.26	81.5	Not Reported	Class 1	None
NPR/Northern Plains Railroad, Inc.	Grand Forks, ND	45.52	0	0	Class 2 and above	286k
OTVR/Otter Tail Valley Railroad	Fergus Falls, MN	81	0	0	12.8 miles class 1 66.7 miles class 2 1.5 miles excepted	None
PGR/Progressive Rail Inc	Lakeville MN	76.75	0	Not Reported	61.25 miles class 1 15.5 miels excepted	None
RRVW/Red River Valley & Western Railroad Company	Wahpeton, ND	2.96	27.42	N/A	Class 2 and above	None
RCPE/Rapid City, Pierre, & Eastern Railroad	Rapid City, SD	41.45 / 130.55	89.1	N/A	Class 2 and above	None
TCWR/Twin Cities & Western Railroad	Glencoe, MN	144	Not Reported	N/A	Class 2 and above	1 bridge unable to accommodate 286k cars, weight rating TBD

Railroad Abbreviation/Name	Headquarters Location	Mileage Owned/Leased	Mileage Trackage Rights	Mileage out of Service	FRA Track Class	Weight Restrictions
NLR/Northern Lines Railway	St. Cloud, MN	0/19	3	1.4	10.5 Excepted, 8.5 Class 1	286k
SLLX/North Shore Scenic Railroad	Duluth, MN	28	Not Reported	Not Reported	Not Reported	Not Reported
LSMR/Lake Superior & Mississippi Railroad	Duluth, MN	5.2	Not Reported	Not Reported	Not Reported	Not Reported

APPENDIX D: MULTIMODAL FACILITIES

TABLE 35. MULTIMODAL FACILITIES IN MINNESOTA

Facility Name	City	Railroad	Products Served	Car Capacity	Category
A Yard	MNNR	St. Paul	General freight	Not Reported	Transload
Agate Terminal	E&E	Worthington	Dry bulk	30	Transload
Alter River Terminal	UP	St. Paul	Aggregate, metal, lumber, dry bulk, break-bulk	65	Water Served
Americold Logistics	BNSF	Newport	Foods	Not Reported	Transload
Andersons Inc.	CPKC	Winona	Fertilizer	6	Water Served
Becker Warehouse & Reload (UMI, Inc)	BNSF	Becker	Steel, lumber, plastics	Not Reported	Transload
Cannon Falls Transload Center	PGR	Cannon Falls	General freight	Not Reported	Transload
CHS Winona River Rail	CPKC	Winona	Fertilizer, agricultural products	20	Water Served
Citi Cargo and Storage	CPKC, PGR	Eagan	Paper	2	Transload
Citi Cargo and Storage	CPKC, PGR	Eagan	Paper	2	Transload
Commercial Transload of Minnesota	MNNR	Fridley	Steel, pipe, structural	5	Transload
Cottage Grove Automotive Compound	CPKC	Cottage Grove	Vehicles	Not Reported	Transload
D Yard	MNNR	Minneapolis	General freight	Not Reported	Transload
Dayton's Bluff Vehicle Facility	BNSF	Saint Paul	Vehicles	Not Reported	Transload
Dilworth Vehicle Facility	BNSF	Dilworth	Vehicles	Not Reported	Transload
Distribution Centers of Minnesota Inc	CPKC	Minneapolis	Paper products	8	Transload
Duluth Harbor Industrial Park	BNSF, CN, CPKC, UP	Duluth	Agricultural products, coal, dry bulk	Not Reported	Transload
Duluth Intermodal Terminal, Clure Terminal	CN	Duluth	Intermodal	Not Reported	Intermodal
Duluth Ore Dock	CN	Duluth	Iron ore, limestone	Not Reported	Water Served
Feed Energy	E&E	Luverne	Liquid bulk	10	Transload
Forest Specialties	CPKC	Minneapolis	Lumber	Not Reported	Transload
Gavilon Grain	CPKC	St. Paul	Forest products, steel	115	Transload
General Transport Inc Not Reported Transload	CPKC, PGR	Lakeville	Plastics	30	Transload
Green Isle Team Track	MPLI	Green Isle	General freight	Not Reported	Transload
Hallett Railroad and Storage Services	BNSF	Duluth	Agricultural products, coal, dry bulk	Not Reported	Water Served
Hugo Team Track	MNNR	Hugo	General freight	Not Reported	Transload
Lake Superior Warehousing Co	BNSF, CN, CPKC, UP	Duluth	Steel, forest products	40	Water Served

Facility Name	City	Railroad	Products Served	Car Capacity	Category
Maiers Transport and Warehousing	BNSF	Saint Cloud	Vehicles, forest products	Not Reported	Transload
Minneapolis Intermodal Terminal	CPKC	Minneapolis	Intermodal containers, trailers	Not Reported	Intermodal
Minneapolis Reload	TCWR	Eden Prairie	Dry bulk, break-bulk	7	Transload
Minnesota Freezer Warehouse Company	UP	Albert Lea	Foods	Not Reported	Transload
Modern Transport Terminal	CPKC	Winona	Steel, grain	16	Transload
Montevideo Transload	TCWR	Montevideo	General freight	Not Reported	Transload
Moorhead Industrial Park	OTVR	Moorhead	Wholesale	Not Reported	Transload
Murphy Warehouse	BNSF	Minneapolis	General freight	Not Reported	Transload
Murphy Warehouse Company	CPKC, PGR	Eagan	Forest products, paper, food products	3	Transload
NLR Yard Transload Track	NLR	Saint Cloud	Grain, lumber, paper, chemicals, cement	Not Reported	Transload
Origination / O2D Co.	CPKC	Rosemount	Agricultural products, fertilizer	70	Transload
Pallet Service Corporation	MNNR	Little Canada	Forest products, steel	7	Transload
Progressive Rail Inc.	PGR	Minneapolis	Forest products	10	Transload
Progressive Rail Inc.	PGR	Lakeville	Steel, forest products, chemicals, food	50	Transload
Rail to Road Transloading	BNSF	Saint Joseph	General freight	Not Reported	Transload
Randolph Transload	PGR	Randolph	General freight	Not Reported	Transload
Roemer Construction	CPKC	Wabasha	Sand, agricultural products	35	Transload
RRVW Crossdock	RRVW	Breckenridge	General freight	Not Reported	Transload
Seven Rivers Terminals	CPKC	Winona	Forest products, plastics, sand	95	Transload
St. Paul Intermodal Facility	BNSF	Saint Paul	Intermodal containers	Not Reported	Intermodal
Stone Arch Commodities and Ag Transfer	CPKC	Minneapolis	Lumber, bulk chemicals, petroleum	0	Transload
Twin Cities and Western Railroad	TCWR	Glencoe	Steel, machinery, agricultural products	25	Transload
Twin Cities Intermodal	UP	Minneapolis	Intermodal containers	Not Reported	Intermodal
Twin City Reload	MNNR	Roseville	Forest products	1	Transload
Two Harbors Ore Dock	CN	Two Harbors	Iron ore	Not Reported	Water Served
UP Auto Reload	UP	Saint Paul	Vehicles	Not Reported	Transload
Vogelsberg Trucking	PGR	Faribault	Aggregate, food, lumber, general freight	30	Transload
Waite Park Transload	NLR	Waite Park	Lumber, steel, stone	Not Reported	Transload